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IV. *A Commentary on the Third Part of the Hortus Malabaricus.*  
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Read December 7, 1824; and June 21, 1825.

CODDA PANNA, p. 1. tab. 1—12.

IN mountainous stony places of Malabar I observed the *Codda Panna* of the natives very common; but I never observed it either in flower or fruit, nor did I ever see its leaves so large as Rheede describes them. The leaves which I saw were about the size of those of the *Borassus flabelliformis*; that is, five or six feet in diameter: and it must be observed, that Rheede states that it is only when the tree is young (“antequam ullos emisit ramulos”) that its leaf is fourteen feet broad and eighteen long: “folia tamen cum arbor ramos (stipites nempe) undique emittit, altiusque excrescat, sensim minora proferuntur.” It is in this state alone that I remember to have seen it. In my *Journey to Mysore* (ii. 488.) I have given an account of the uses to which it is applied; and I must further observe that, notwithstanding its size and woody texture, this plant, like our annuals of Europe, produces fructification only once, and then dies; whereas many herbaceous plants, as well as trees, continue to bud and flower every year for ages.

The generic name *Panna* is not peculiar to Palms, as the author supposed; but even in the *Hortus Malabaricus* is given to several Ferns. (*Hort. Mal.* xii. 31, 35, 61, 65, 67.) It is much

much to be regretted that in the indexes to the *Hortus Malabaricus*, not only in the work itself, but in the *Flora Zeylanica* of Linnæus, and *Thesaurus Zeylanicus* of Burman, the plants have been arranged according to their specific, and not according to their generic names; for in the dialects of India, as well as in English, the specific name usually precedes the generic. There are some exceptions:—the Malabar words *Maram* signifying a tree, *Kodi* a sarmentose plant, *Valli* a climber, *Pullu* a grass, and *Maravara* a parasitical plant, are usually placed after the generic term, being properly denominations of classes or orders. In the same manner *Ghas Gaya* or *Gaha* (herba, planta) in the dialect of Ceylon is to be considered not as denoting a genus, but a class or order. Keeping this in mind, the classification of the natives may be readily discovered, and in general will be found to show a considerable accuracy of observation.

The name *Karetela*, said to be given to this palm by the Brahmans of Malabar, I cannot explain; unless we suppose it composed of two words, *Kare* and *Tela*, the former signifying wild; and the latter may be the same with *Tala* or *Tali*, the Ceylonese name. This is obviously the same with *Tal*, the name given in the north of India to the *Borassus flabelliformis*, to which the *Codda Panna* has a very great resemblance. The term *Ghas Gaya* or *Gaha*, annexed by the Ceylonese, I have already explained; but the word *Pot* added to *Tali* is the same with *Pata* or leaf, annexed because the leaf of this palm is the part most commonly used.

Commeline, in the note annexed, seems to have an unnecessary doubt in referring to the *Codda Panna* C. Bauhin's *Arbor foliis sex brachiorum longis, cujus folio extenso tres quatuorve viri in itinere operiuntur, ut pluvias non metuant*. Except in coining a new name, Ray, as usual with Indian plants, gives us no knowledge but what is derived from Rheede; and the same is  
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the case in this instance with Plukenet (*Alm.* 277.), who adopts the name given by Ray, *Palma montana folio plicatili flabelliformi maximo, semel tantum frugifera*: nor does he quote any synonyma except the *Hortus Malabaricus*.

The elder Burman (*Thes. Zeyl.* 181.) borrowed from Hermann the name *Palma zeylanica, folio longissimo et latissimo*, by no means so characteristic as that of Ray; for, as I have said, in its full growth the leaves are not remarkably larger than those of the *Borassus*.

Rumphius (*Herb. Amb.* i. 44.) compared the leaves of the *Codda Panna* with those of his *Saribus*, but says “verum tantum differt ut diversa sit habenda species.” (See my Commentary on the *Herbarium Amboinense*.) Notwithstanding what Rumphius had properly observed, Linnæus in the *Flora Zeylanica* (394.) joined the *Saribus* with the *Codda Panna* to form his *Corypha*: but it was probably the latter that he meant to describe, as we have no reason to believe that the *Saribus* is found in Ceylon. In the *Species Plantarum* and Burman's *Flora Indica* (240.) no change took place, except giving to the *Corypha* the specific name *umbraculifera*, and without any good reason omitting some of the synonyma. Gærtner continued the error; nor do I know which of the fruits he described.

After this long continuance of error, the difference between the *Saribus* and *Codda Panna* was pointed out by M. Lamarck (*Enc. Meth.* ii. 130.), who considered the latter as the *Corypha umbraculifera*, and in this has been followed by Willdenow. (*Sp. Pl.* ii. 201.)

#### NITI PANNA, p. 7.

There is no figure of this plant, and the description is so imperfect that little dependence can be placed on such conjectures as I can offer. It is probably a palm growing in or close by the rivers of Malabar; and as the description says, “folia Palmæ foliis,

foliis, plane similia sunt," we may infer that its leaves have a strong resemblance to those of the *Cocos nucifera*, which by way of eminence Rheede calls *Palma indica*. On these grounds I think it probable that it may be the *Nipa fruticans* (Willd. Sp. Pl. iv. 597.). I did not indeed observe this in Malabar; but it is common near the mouths of the Ganges, and on the banks of estuaries in the countries and islands south and east from thence.

TODDA PANNA, p. 9. tab. 13—21.

The plant here described is perfectly known to me, although in Malabar the natives call it *Indu* (*Journey to Mysore*, ii. 469.); nor did I there hear of the names *Todda*, *Mouta*, or *Andexa Motha Panna*, which Rheede had received at Cochin. He fell into a great error in considering this as the *Soteetsou* of the Japanese, that is, as the tree which produces *sago*, as is very properly pointed out by Commeline in his note (p. 14.). Notwithstanding this, Plukenet (*Alm.* 276.) joins the *Todda Panna* with the *Palma farinifera Japonica* of Breynius, or *Soteetsou* of the Japanese, an error followed by Linnæus (*Fl. Zeyl.* 393.), when he established a new genus called *Cycas*. Concerning these errors, however, I have said every thing necessary in my Commentary on the first part of the *Herbarium Amboinense*, and I need here only insert the real synonyma of the *Todda Panna*.

*Palma indica* caudice in annulos protuberante distincto. Raii  
*Hist.* 1360.

*Cycas frondibus pinnatis, foliis lineari-lanceolatis, stipitibus spinosis.* Linn. *Fl. Zeyl.* 393. (exclusis nisi Raii synonymis omnibus).

*Olus calaphoides e Celebe vel ex insulis Ulasseriensibus.* Herb.  
*Amb.* i. 87. 89. t. 22. 23.

*Cycas circinalis.* Burm. *Fl. Ind.* 240. (exclusis synonymis  
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*Breyonii*, *Sebæ*, et *Kæmpferi*. *Enc. Meth.* ii. 231. (excluso *Sebæ* synonymo *Sup.* ii. 425. in observatione.) *Willd. Sp. Pl.* iv. 844. *Brown Nov. Holl.* i. 347. in observatione. *Hort. Kew.* v. 409.

I have only further to add, that in the figures the rings on the stems are represented more regular and deep than I have ever observed on the growing plant, which has probably prevented Dr. Roxburgh (*Hort. Beng.* 71.) from quoting them.

KATOU INDEL, p. 15. tab. 22—25.

In India this is the most common Palm. The names *Katou Indel*, *Tamara do Muto*, and *Wild Dandel Boom* imply its being a kind of Date; and the resemblance between it and the Date-palm brought from Arabia is so great, that, except by the fruit, I could not distinguish the one from the other: but I did not see the flower of the Arabian plant. The fruits are very different in quality, but not more so than those of the Crab-apple and Pippin; yet the flower of the *Katou Indel* differs so much from that of the *Phoenix dactylifera*, at least as this is described by Linnæus, that he considered it as belonging to a different genus; for its flower has six stamina and three germina, while Linnæus believed that the Date had three stamina and one germen; and it is still thus described in the *Hortus Kewensis* and by Willdenow: but M. Lamarck (*Enc. Meth.* ii. 261.) observes that the *Phoenix dactylifera* has six stamina. He indeed describes it as having only one germen; but he has perhaps been led to do this from no more than one coming to maturity, as is the case also in the *Katou Indel*.

Neither Commeline in his note, nor Plukenet (*Alm.* 276.), seems to have been aware of the strong resemblance between the proper Date-tree and the *Katou Indel*, which they call *Palma sylvestris*

*sylvestris Malabarica, folio acuto, fructu Pruni facie.* The specific name *Katou* implies *sylvestris*; and *Indel* is evidently the same name with *Indi*, which, according to Plukenet (*Alm.* 277.), the natives of Ceylon give to the Date-palm. *Palma sylvestris* is therefore a translation of *Katou Indel*. The *Phœnix dactylifera*, which was the *Palma* first known to the learned of Europe, according to Plukenet is distinguished by the Ceylonese specific name *Maha* (great) prefixed to *Indi*; while he mentions another kind, called by the Ceylonese *Hin Indi*, which he describes as *Palma dactylifera minor humilis, sylvestris, fructu minore.* (*Alm.* 277.) This he considers as different from the *Katou Indel*; but the elder Burman (*Thes. Zeyl.* 183.) considered them as the same. I should have no doubt that Burman was in the right, were there not another species of this me genus (*Phœnix farinifera*, Hort. Beng. 73.) to which the term *humilis* is more applicable; for the *Katou Indel* is fully as large as the *Phœnix dactylifera*. Neither Plukenet nor Burman, however, says any thing specific concerning the size of the *Hin Indi*; only the term *humilis* applied to it, is used also by Plukenet for the dwarf Palm of Spain (*Chamærops humilis*), which is of a similar size with the *Phœnix farinifera*, and does not approach near in magnitude to the *Katou Indel*. I therefore refer the *Hin Indi* to the *Phœnix farinifera*, which is a very common plant on all the hilly country between the Ganges and Cape Comorin. I have, however, great doubts of the *Maha Indi* of Ceylon being the proper Date of Arabia, or of its being different from the *Katou Indel*, which I know is very common in Ceylon; but I never heard of proper Dates being produced either there or in any part of India. It is true that in the gardens of the curious I have seen a few trees imported from Arabia; but I never saw these produce fruit. It is also true that I consider the *Katou Indel* as merely the wild plant of the same species with that which is cultivated in Arabia and Africa:

but this culture has wonderfully improved the fruit ; so that from being useless, as in the *Katou Indel*, it has become one of the most valuable vegetable productions.

Linnaeus (*Fl. Zeyl.* 390.) however entirely adopted the opinion of Burman, and supposed the *Indi* Palm to be the same with that which produces dates, and to be so common in India that it had communicated its name to the country. This opinion, however, could only be adopted on the supposition that the *Katou Indel* is the *Indi* : but the whole hypothesis seems groundless ; for in the dialects of the North of India the *Katou Indel* is called *Khajur* in the vulgar, and *Kharjuri* in the sacred dialect (*Kasouri* of the Brahmans of Malabar) ; and it was no doubt from some circumstance attending the North of India that the Western nations gave this name to the country. The *Katou Indel*, however, was considered by Linnaeus as quite distinct from the Date-palm (*Phoenix dactylifera*), and in the *Flora Zeylanica*, 397. was called *Vaga* ; but when he published the *Species Plantarum*, he changed this name to *Elate sylvestris* (*Burm. Fl. Ind.* 241.), considering it, on very slight and insufficient grounds, as the *Elate arbor* of the Romans, which was a tree used in preparing ointments, as Pliny mentions (*Nat. Hist. l. xii. c. 28.*), “quam alii Elatam vocant, nos Abietem, alii Palmam, alii Spathen. Laudatur Hammoniaca maxime, mox Ægyptia, dein Syriaca, duntaxat in locis sitientibus odorata, pingui lachryma, quæ in unguenta additur ad domandum oleum.” The reason, probably, why Pliny calls it *Abies* is, that *Ελατη* was the Greek name for the Latin *Abies* : but there is no reason to suppose that this grows either in Egypt or in the Oasis of Ammon. Linnaeus was therefore no doubt justifiable in rejecting this supposition of Pliny : but when he adopted the term *Palma*, used also as synonymous with *Elate* in Pliny, he should have considered that this was a generic term ; and before he confounded the *Elate* with the  
*Katou*

*Katou Indel*, he should have inquired whether the latter produces a gum or resin (*lachryma*), such as was used by the Roman perfumers. This being by no means the case, the name *Elate* is improperly applied to the *Katou Indel*.

Willdenow however (*Sp. Pl.* iv. 403.), and the *Hortus Kewensis*, v. 280, continue to describe the *Katou Indel* as the *Elate*, a genus distinct from the *Phœnix*, and place it in *Monœcia hexandria*, probably because Rheede figures and describes only the female tree, the *tria albicantia lanuginosa staminula*, which he mentions, being the three pistilla. M. Lamarck (*Enc. Meth.* iii. 244.), although he continues to describe it as the *Elate sylvestris*, observes, “C’est un Palmier qui nous paroît extrêmement voisin du Dattier (*Phœnix dactylifera*) par ces rapports, et dont même il est peut-être une espèce.” The only doubt I have is, whether or not it is to be considered as any thing else than merely the uncultivated variety of the *Phœnix dactylifera*. Dr. Roxburgh indeed, an excellent authority, mentions (*Hort. Beng.* 73.) both a *Phœnix dactylifera* and a *P. sylvestris*; which last I know to be the *Katou Indel*, although he does not quote it, deterred by the authority of so many great botanists: but then in this catalogue he inserts, under distinct names, plants which he admits to be mere varieties; as for example, the *Musa sapientum* and *M. paradisiaca*, p. 19: and I must say, that looking with the utmost care at the common plant of India, and that known to have been brought from Arabia, like those in the garden of the late Tippoo Sultaun, when in a similar state of growth,—that is, when the stems were only a foot or two in height, and before they began to flower,—I have not been able to see the smallest difference between them, except that the plant of Arabia was rather the largest and more vigorous. With such an extraordinary similarity, I should be very much indeed surprised to find that the proper Date of Arabia had only one pistillum; but if this be the case, we must admit the  
species



species to be distinct. In the mean time I shall describe the *Katou Indel*, so that those who have an opportunity may compare the description with the *Phœnix dactylifera*. For an account of the uses to which the *Katou Indel* is applied, I may refer to my *Journey to Mysore* (i. 54, 56, 393 ; iii. 320.).

*Caudex* arboreus, diametro pedali, 10—20 pedes altus, teres, rudimentis stiptum imbricatis undique exasperatus, indivisus. *Fronde*s plures terminales, confertæ, patentés, pinnatæ. *Pinnæ* sparsæ, 6—8 hinc inde approximatis squarrosæ, decurrentes, lanceolatæ, integerrimæ, acutæ, glabræ, nervis pluribus longitudinalibus striatæ, rigidæ, ima parte complicata in rachim insertæ ; inferiorum nonnullæ subtrigonæ, canaliculatæ, mucronato-pungentes. *Stipites* ad foliola brevissimi, basi dilatato amplexicaules. *Rachis* trigonus, latere inferiori convexo ; superioribus, quibus pinnæ adnascuntur, planis. *Stipulæ* intrafoliaceæ, fibris decussantibus intertextæ.

*Flores* dioici.

Masculinæ arboris :

*Spadix* axillaris, solitarius, erectus, palmaris, planus, lævis, truncatus, ultra medium extra tectus spicis plurimis in capitulum hemisphæricum magnitudine capitis humani congestis. *Pedunculi* glabri, angulati, flexuosi. *Flores* glabri, nitidi, albidi, sparsi, magni.

*Calyx* concavus, tridentatus. *Petala* tria, ovata, acuta, rigida, patentia, angulata, calyce multo longiora. *Filamenta* sex, brevissima, receptaculo carnosio parvo inserta. *Antheræ* filiformes, spirales, petalis breviores.

Fœmininæ arboris :

*Spadix* tectus spicis plurimis, longissimis, erectis, simplicissimis, glabris, flexuosis, angulatis. *Flores* plures, sparsi, sessiles.

*Calyx*

*Calyx* monophyllus, ore tridentato cyathiformis. *Petala* tria, subrotunda, in globum ore patulo convoluta. *Germina* tria, oblonga. *Styli* subulati. *Stigmata* acuta.

*Drupa*, vel potius forte *bacca* (germinum duobus abortivis), solitaria, ovata, Dactylo Arabico dimidio minor, flava, mollis, carnosae, calyce persistente infra cincta. *Cortex* membranaceus, tenuissimus. *Caro* crassiuscula, dulcedine quadam austera.

I may here observe that, besides the *Katou Indel*, I have seen in India three other species of the same genus; one of them a small tree, and the other two without stems. Of these last, one, which I have already mentioned, is common in all the hills of India south from the Ganges, and is what Dr. Roxburgh (*Hort. Beng.* 73.) calls *Phœnix farinifera*; and I think that this is probably the *Hin Indi* of the Ceylonese, and the *Palma dactylifera minor humilis sylvestris fructu minore* of Parkinson, Plukenet, and Burman. In the North of India this is called *Palawat*; and its leaves, which are not so rigid as those of the other species, are bruised and twisted into ropes. Its fruit is supported on a stem almost as long as the leaves (*frondes*).

The other dwarf *Phœnix* is found in the more elevated plains on the north side of the Ganges, where the soil contains much clay, and in the dialect of Bengal is called *Janggali Khajur*; and it is, I presume, what Dr. Roxburgh (*Hort. Beng.* 73.) calls *Phœnix acaulis*. Either the *Phœnix acaulis* or *P. farinifera*, there can be little doubt, is the same with the *P. pusilla* of Gærtner (*De Sem.* i. 24. t. 9.). The plant found on the north side of the Ganges is the smallest, and therefore the most suitable for the name *pusilla*; but then Gærtner procured the seeds from Ceylon, where it is probable that the plant of Southern India is alone known. He describes, however, only the fruit; and from  
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that only the species, I suspect, cannot be fully determined; which probably induced Dr. Roxburgh to give new names to both plants, although it is probable that his *P. farinifera* is the *P. pusilla* of Gærtner. I shall here give a description of the *Phœnix acaulis*, or *Janggali Khajur* of the Bengalese.

*Radix* fibrosa, crassa. *Caudex* nullus. *Stipites* plures cum stipulis congesti in bulbum imbricatum vix extra terram emergens, rigidi, brevissimi, trigoni, subtus convexi. *Fronde* pinnatæ, rarius ultra cubitum longæ. *Pinnæ* hinc inde 3—5 approximatis squarrosæ, ima parte complicata in rachim insertæ, lineares, nudæ, nervis longitudinalibus parallelis striatæ, rigidæ, apice spinescentes, inferioribus brevissimis. *Rachis* communis trigonus. *Stipulæ* geminæ, laterales, maximæ, membranaceæ, margini stipitis utrinque longitudinaliter adnatæ, nervis intus reticulatæ.

*Flores* dioici.

In masculina arbore :

*Spadix* erectus, e terra exsertus, ramis simplicibus confertis angulatis multifidus. *Spatha* membranacea, marcescens, vaginans, indeterminatè dehiscens. *Flores* duri, angulati, lutei.

*Calyx* minutus. *Petala* tria, rigida, oblonga, acuta. *Filamenta* nunc tria tunc sex, brevissima. *Antheræ* oblongæ.

In fœminina arbore :

*Inflorescentia* ut in masculina, sed spadix vix apice e terra emergens. *Flores* virides, squama rigida parva adpressa bracteati.

*Calyx* monophyllus, crassus, truncatus. *Corolla* rigida, laciniis ovatis obtusis adpressis trifida. *Germina* tria, ovata; quorum duo semper abortiva, cito marcescentia. *Stylus* vix ullus. *Stigmata* acuta.

*Bacca* oblonga, acuta, nigra, carnosa, mollis, dulcis, pollicem transversum vix longa, calyce multo major. *Semen* oblongum,

longum, obtusum, basi emarginatum, hinc sulco profundo, inde papillula pallida notatum. *Integumentum* membranaceum. *Albumen* cartilagineum, non ruminatum. *Embryo* dorsalis, ovatus, albus.

T'SJAKA MARAM seu JACA seu JAACA, p. 17. tab. 26—28.

For what I have to say concerning this tree I may in a great measure refer to my Commentary on the first volume of the *Herbarium Amboinense*, the *Jaca* being identically the same with the *Saccus arboreus major* of Rumphius. With this author one might be inclined to think that *Tsjaka* or *Jaca* are derived from the Dutch word *Zak*, signifying a sack,—the fruit resembling a bag filled with seeds; for the tree or fruit is by no means called *Jaka* in the Hindustani language, as Rumphius supposed: but in that dialect it is called *Kantal* and *Pumas*, from *Panasa* of the sacred language; and this is the same word with *Ponossou*, which according to Rheede is used by the Brahmans of Malabar. *Pilau* is therefore perhaps the proper Malabar name? It must however be observed, that the natives of Malabar have another tree called *Katou Tsjaka* (*Hort. Mal.* iii. 29.), or the wild *Tsjaka*, which has some resemblance to the *Tsjaka* or *Artocarpus integrifolia*; but its fruit does not resemble a sack: and this would seem to show that *Tsjaka* is a generic word not derived from the Dutch. By the Burmas this tree is called *Pi-næh*.

ATA MARAM, p. 21. tab. 29.

In my Commentary on the *Herbarium Amboinense* (i. 138.) I have said what occurs to me concerning this plant. The names *Ata* and *Atoa*, in general use over India, seem to be derived from the *Atas* of the Portuguese, by whom probably this fine fruit was introduced into India.

## ANONA MARAM, p. 23. tab. 30. 31.

In the *Commentary* on the *Herbarium Amboinense* (i. 136.), when treating of the *Anona*, I have said all that occurs to me as necessary concerning this plant. From a slight resemblance in the fruit, this and the preceding tree have been erroneously classed by the Brahmans of Malabar with the *Artocarpus* in the genus *Ponossou*.

## ANSJELI, p. 25. tab. 32.

In the *Commentary* above mentioned (i. 109.), when treating of the *Angelyquen*, I have mentioned all that appears necessary concerning this tree, which the Brahmans most properly class with the *Artocarpus* or *Ponossou*, giving this the specific name *Pata* (small), which in the plate is wrongly engraved *Pala*.

## KATOU TSJAKA, p. 29. tab. 33.

This is the plant which I mentioned in the *Commentary* on page 17 as having been considered by the natives as belonging to the same genus with the *Artocarpus integrifolia*; no doubt a very rude arrangement, as Commeline in his subjoined note remarks.

Plukenet formed a much more accurate conjecture (*Alm.* 47. & 203.) in classing it with his *Arbor Americana triphylla, fructu Platani quodammodo æmulante* (*Phyt. t.* 77. *f.* 4.); which in another place (*Alm.* 336.) he calls *Scabiosa dendroides Americana, ternis foliis circa caulem ambientibus, floribus ochroleucis*, which is the *Cephalanthus occidentalis*. Linnæus accordingly in the *Flora Zeylanica*, 53, called this plant the *Cephalanthus foliis oppositis*. He afterwards, however, considered that its having five stamina was a ground sufficient for separating it from the *Cephalanthus*, which has only four; and therefore in the first edition of the *Species Plantarum* he called it *Nauclea orientalis*, in  
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which he was followed by Burman (*Fl. Ind.* 51.), who added to the synonyma the *Bancalus* of Rumphius (*Herb. Amb.* iii. 84. *tab.* 55.). Now in this plate there are two figures; of which the first represents (setting aside the errors in the direction to the plate) the *Bancalus mas et parvifolia*, which may perhaps be considered as the same with the *Katou Tsjaka*, although this is by no means clear. Without any attention to the fact of two plants being figured in *tab.* 55 by Rumphius, and laying aside his usual accuracy, M. Lamarck quotes the *Bancalus* (*tab.* 55.) for his *Cephalanthus chinensis* (*Enc. Meth.* i. 678.), leaving it doubtful whether or not the *Nauclea orientalis* is different; but he does not quote the *Katou Tsjaka*. Afterwards M. Poiret does not diminish the confusion by giving us a *Nauclea orientalis*, for which he quotes the *Cephalanthus chinensis*, the *Cephalanthus* of Linnæus, and *Bancalus* of Rumphius with doubt, while he refers the *Katou Tsjaka* to his *Nauclea citrifolia* (*Enc. Meth.* iv. 435.), distinguishing this from his *N. orientalis* by its having the pedunculus shorter than the flower; while in his *N. orientalis* this member is much longer, as represented by M. Lamarck (*Ill. Gen.* t. 153. f. 1.). Still later, M. Poiret endeavours (*Enc. Meth. Sup.* iv. 63.) to point out differences between his *Nauclea orientalis* and *Cephalanthus chinensis*, which is the *Nauclea purpurea* of Roxburgh and Willdenow (*Sp. Pl.* i. 928.). Now all this seems wrong: for the *Katou Tsjaka* is the *Nauclea orientalis* or *Cephalanthus foliis oppositis* of Linnæus; and the *Nauclea citrifolia*, like this having a short pedunculus, is the real *Nauclea orientalis*; while the *N. orientalis* figured by M. Lamarck must be considered as a new species, and from the size and shape of its leaf might be called *N. citrifolia*, were it not for leading into error. Besides, before we can safely refer the *N. purpurea* or *Cephalanthus chinensis* to the *Bancalus* (*tab.* 55.), we must know whether the first or second figure of Rumphius is meant. Neither

can, with any certainty, be said to represent the *Katou Tsjaka*, both having the pedunculus much too long, and therefore both agreeing with M. Lamarck's figure : yet, as the second figure in Rumphius resembles most M. Lamarck's figure, I should quote for his *N. orientalis* the *Bancalus media* (*Herb. Amb.* iii. 84. t. 55. f. 2.)

When I returned from Ava to Calcutta (1796), I know that Dr. Roxburgh considered the *Katou Tsjaka* as the *Nauclea orientalis*, and under that name sent it to the Kew Garden, where it still remains (*Hort. Kew.* i. 366.): but Dr. Roxburgh has since (*Hort. Beng.* 14.) left out altogether the *N. orientalis* and *Katou Tsjaka* ; and the plant which he and I considered as such, or at least one very like it, he calls *Nauclea Cadamba*. For this he may have had different reasons. In the first place, Gærtner (*De Sem.* i. 151. t. 30. f. 8.) has, I have little doubt, described the fruit of Dr. Roxburgh's *Nauclea parvifolia* (*Hort. Beng.* 14.) as that of the *N. orientalis*. The synonyma, however, which he quotes are totally erroneous : for his plant has sessile capitula ; but those of both *Katou Tsjaka* and *Bancalus* are pedunculated. In the next place, although I think it probable that the *Katou Tsjaka* is called *Kadam* in the vulgar, and *Kadamba* in the sacred dialect of Gangetic India ; and although, no doubt, Dr. Roxburgh's *Cadamba* is the same word, yet the same names are given to what I take to be the *Arbor noctis* s. *Bancalus fœmina et latifolia* of Rumphius (*Herb. Amb.* iii. 84. t. 54.), which although very like indeed to what I consider as the *Katou Tsjaka*, yet has a fruit which can by no means be reconciled with the description given by Rheede, who says, "fructus globosi virides sunt, qui dein rubicundi, tandemque nigricantes et fragiles evadunt ; et si asperius tractentur, facile solvuntur, ac in plures oblongos virides nitentes folliculos secedunt." Now I think that the *folliculi nitentes* imply capsules, such as described by Gærtner, although they

they may be covered by an acid cortex (“sapor in cortice acidus,” *H. M.*); but in the *Kadamba*, which I take to be the *Arbor Noctis*, there is not a vestige of capsules, and the fruit is composed of berries of a soft substance throughout. Unfortunately I have not seen the fruit of the *Kadamba*, which I think nearest allied to the *Katou Tsjaka*, and therefore I cannot say whether, like the *Arbor Noctis*, it is composed of berries, or whether, like the *Katou Tsjaka*, it is composed of *capsulæ corticatæ*. There is one circumstance, however, which induces me to suppose that this *Kadamba* is not the *Katou Tsjaka*. This in the figure of the *Hortus Malabaricus* is represented with the stylus no longer than the tube of the corolla; but in our *Kadamba* it is longer than the lacinia. Although it has a similar stylus, it is quite different from the *Cephalanthus chinensis* (*Enc. Meth. Sup.* iv. 63.), which has violet-coloured flowers, a truncated calyx, and the stamina included within the tube of the corolla. These differences between the *Kadamba* and *Katou Tsjaka*, however, are minute; nor do I know that they are constant, even in the same individual at different periods of growth; and therefore I must leave the matter to be finally determined by those who have leisure to examine the plants in all their stages when cultivated. Should the fruit of both *Kadambas* be similar, I should have no doubt that they are mere varieties; that both should be referred to the *Nauclea Cadamba* of Roxburgh, and to the same genus with the *Arbor Noctis* of Rumphius, which I call *Cadamba nocturna*; and that they are both different from the *Katou Tsjaka*, which is a real *Nauclea* or *Cephalanthus*, for these genera are essentially the same. In the mean time I shall give an account of this *Kadamba*, which is most like the *Katou Tsjaka*, premising that I am uncertain whether it be this or the other plant of the same name that Dr. Roxburgh called *Nauclea Cadamba*. Specimens of the plant which I mean, are to be found in the collection



tion which I presented to the library at the East India House (No. 706).

*Nauclea?* *orientalis*. *Hort. Kew.* i. 366? *Willd. Sp. Pl.* i. 928.

*Nauclea Cadamba*. *Hort. Beng.* 14?

*Nauclea citrifolia*. *Enc. Meth.* iv. 435?

*Cephalanthus foliis oppositis*. *Linn. Fl. Zeyl.* 53?

*Bancalus mas et parvifolia*. *Herb. Amb.* iii. 84. t. 55. f. 1?

*Katou Tsjaka*. *Hort. Mal.* iii. 29. t. 33?

*Kadamba Sanscritæ*.

*Kadum Hindice et Bengalensium*.

*Habitat* in Indiæ aridioris sylvis.

*Folia* oblonga, utrinque acuta. *Flores* odore gravi flavi, pistillo albido. *Bracteæ* nullæ. *Pedunculus* mediocris, crassus. *Capitulum* magnitudine *Pomi minoris globosum*.

*Calyx* longitudine dimidii tubi corollæ ultra medium quinquefidus, laciniis linearibus concavis obtusis. *Filamenta* longitudine fere antherarum ad medium adnata. *Antheræ* exsertæ. *Stylus* corollæ tubo multum longior. *Stigma* oblongum, utrinque acutum.

Leaving the other *Kadamba* to be described in a Commentary on the *Arbor Noctis* of Rumphius, I shall here give some account of the tree which Gærtner seems to have confounded with the *Katou Tsjaka*, and of which specimens have been deposited in the library at the India House (No. 705). Others were sent home from Ava under the name of *Nauclea odoratissima*, and are now probably in the collection of the late Sir Joseph Banks. From Dr. Roxburgh I know that this is his *Nauclea parvifolia*.

*Nauclea parvifolia*. *Hort. Beng.* 14. sed nescio an Willdenovii (*Sp. Pl.* i. 929. et *Enc. Meth. Sup.* iv. 63.), cui calyces quinquentati acuti.

*Nauclea*

*Nauclea orientalis.* Gært. de Sem. i. 151. t. 30. f. 8. (exclusis synonymis.)

Thein Burmanorum.

*Habitat* ubique in Indiæ aridioris sylvis.

*Arbor* inter elatiores recta, cortice lævi, materia firma. *Ramuli* nudi, tetragoni, obtusanguli. *Folia* opposita, basi nunc acutiuscula, tunc sæpius obtusa, vel etiam retusa, apice obtusiuscula, juniora subpubescentia, maturitate glabra, costis parallelis approximatis lineata, integerrima. *Petiolus* teres, canaliculatus, brevissimus, pubescens. *Stipulæ* interfoliaceæ oppositæ, caducæ, obovatæ, dorso carinatae, petiolis longiores, nudæ, integerrimæ.

*Capitulum* magnitudine Pruni terminale, subsessile. *Flores* odorati, subherbacei, bracteis apice incrassato obtusissimis, calyce longioribus interstincti.

*Calyx* omnino truncatus. *Corolla* infundibuliformis, quinquefida. *Antheræ* ex apice tubi exsertæ, subsessiles. *Stylus* corollæ laciniis longior. *Stigma* capitatum, obtusum, oblongum.

*Fructus* a Gærtnero bene descriptus.

PELA, p. 31. tab. 34.

MALACKA PELA, p. 33. tab. 35.

These trees no doubt came originally from the West Indies, although the second is supposed in Malabar to have come from Malacca or China, probably because it came from Mexico by the route of the Philippines. The name *Pela* is evidently a corruption of *Pera*, the term used by the Brahmans, which again is the same with the *Peyara* of the Bengalese, both no doubt derived from the *Peera* of the Portuguese. I mention this, lest the word *Pela* (so unlike *Guajava*, the original name of

of the trees) should be supposed to indicate them to be plants indigenous to Malabar. *Pera* was probably corrupted into *Pela*, because these trees had a considerable resemblance to that which will be next described.

Plukenet (*Alm.* 181.) justly considers both the plants of Rheede as mere varieties of one species differing in the colour and size of the fruit, a distinction that was adopted by Dr. Roxburgh; but Rheede and Linnæus seem rather to have founded the distinction on the shape of the fruit, and erroneously held them to be distinct species. I may however refer to my *Commentary* on the first volume of the *Herbarium Amboinense* (p. 140.) for what further I have to say concerning these plants.

PELOU, p. 35. t. 36.

The natives of Malabar call this also *Katou Pela*; and in fact it has a considerable resemblance to the *Psidium*, as Rheede and his commentator observe, although it is more nearly allied to the 2nd division of Jussieu's *Myrti*, especially to the *Pirigara* or *Gustavia*; for according to Gærtner (*De Sem.* ii. 264.) it is not yet ascertained that the *Pirigara* wants the albumen. This organ the *Pelou* decidedly has; and on this account it may be doubted if it might not rather be classed with the 2nd division of Jussieu's *Guaianæ*, although its petals are quite distinct.

Although one of the most common and generally diffused trees in India, no notice, so far as I know, was taken of it by European botanists until 1800, when I went to Mysore; and on my return in 1801 showed it to Dr. Roxburgh, who in the following year procured plants from Colonel Hardwicke (*Hort. Beng.* 52.), and described it under the name of *Careya arborea*, calling it after the missionary of that name, most justly entitled to the honour by his diligence and knowledge of botany, although I had previously called it *Cumbia*, and under this name  
gave

gave specimens and a drawing to Sir J. E. Smith, to whom also I at the same time gave specimens of a dwarf species of the same genus, which Dr. Roxburgh calls *Careya herbacea*, and specimens of the latter are also lodged in the library at the India House.

The following is a description of the *Pelou*, which I do not find mentioned in any author since the time of Rheede; nor does Dr. Roxburgh quote it for his *Careya arborea*, deterred probably by the figure having been taken from a plant with old worm-eaten decayed leaves, in which the serratures are badly represented: but Rheede expressly says “*folia in ambitu crenata* ;” and it must be observed, that he properly represents the leaves on a different branch from the flowers; for in the cool season the tree loses the greater part, or even the whole of its leaves and flowers in spring, before the fresh leaves open; so that it is only a rare branch that can then be found with any leaves, and these generally old, withered, and gnawed by insects.

*Careya arborea.* *Roxb. Hort. Beng.* 52.

*Pelou.* *Hort. Mal.* iii. 35. t. 36.

Kumb Bengalensium.

Kumbi Hindice.

Cumbia Coneanæ. *Buchanan's Mysore* iii. 187.

Paylay Tamulorum.

Gaula Carnatæ.

*Habitat* ubique in Indiæ sylvis.

*Arbor* inter minores ligno fœtido. *Rami* cicatricibus foliorum exasperati. *Folia* alterna, apices versus ramulorum congesta, decidua, obovata, minute serrata, nervo medio subtus carinato-costata, venosa, nuda (Rheedius habet lanuginosa). *Petiolus* brevissimus, trigonus, acutangulus, marginatus, non stipulaceus.

*Flores* sex seu septem, magni, albi, subsessiles, alterni prodeunt e ramulorum apice ante folia, quæ postea intra flores erumpunt; unde flores terminales, fructus laterales. *Bracteæ* ad singulos flores ternæ, oblongæ, obtusæ, calyce paulo breviores, persistentes.

*Calyx* superus, quadripartitus, laciniis subrotundis, concavis, ciliatis, prope fundum disco erecto integro cinctus. *Petala* quatuor, coriacea, oblonga, calyce multo longiora, ciliata, oblique revoluta, extra discum inserta. *Filamenta* plurima, indefinita, subulata, multiplice serie disco inserta, basi coalita, interioribus brevissimis, et intermediis tantum antheriferis inæqualia. *Antheræ* oblongæ. *Germen* turbinatum, disco concavo tetragono coronatum, quadriloculare. *Stylus* teres, longitudine staminum, rectus. *Stigma* subrotundum, quadrilobum.

*Bacca* oviformis, lævis, calyce supero persistente umbilicata, carnosâ, filamentosa, septis fere evanescentibus, sed seminibus quadrifariam approximatis, et carne interstinctis obsolete quadrilocularis. *Receptaculum* nullum. *Semina* plura, nidulantia, compressa, glabra, hinc hylo derasa. *Integumentum* coriaceum, crassum. *Albumen* album, forma seminis, carnosum. *Embryo* recta, teres, utrinque acutiuscula, longitudine albuminis centralis.

COVALAM, p. 37. tab. 37.

In a *Commentary on the Herbarium Amboinense* (i. 197.) I have said every thing that seems necessary concerning this plant. The name *Belou*, given by the Brahmans of Malabar, is evidently the same with the *Bel* of the Bengalese dialect, as the commentator justly observes; and *Scrifole* is his orthography for what I write *Sri-phul* (the holy fruit).

SYALITA,

SYALITA, p. 39. tab. 38, 39.

I suspect that Rheede has here made a transposition of names, and that the Malabars call this tree *Karinbalapala*, while it is the Brahmans who call it *Syalita*; for these persons usually seem to employ Hindwi names; and *Chalta*, evidently the same with *Syalita*, is the name used in the North of India. Besides, *Karinbalapala* savours of Malabar barbarism.

Strange to say, Plukenet (*Mant.* 124.) confounded this with the *Artocarpus* of the islands in the Pacific Ocean, and gave an account from Dampier very applicable to the *Artocarpus*, but totally at variance with that of Rheede. We may presume, therefore, that he knew neither plant except from the descriptions of the authors quoted. Ray gave the *Syalita* a new name; but, as usual with Indian plants, borrowed all that he says from Rheede.

Rumphius (*Herb. Amb.* ii. 141. t. 45.) described what he calls *Songium*; and Burman in the annexed observation considers this, if not quite the same, as at least a species of the same genus; although Rumphius himself rather considered his *Songius* as being the same with the *Syalita*. In this however he was evidently mistaken, as the *Songius* has several flowers on each pedunculus. In the first edition of the *Species Plantarum*, therefore, Linnæus without any doubt united the *Songium* and *Syalita*, under the name of *Dillenia indica* (*Burm. Fl. Ind.* 124.). Thunberg, however, (*Linn. Trans.* i. 200.) considered them as distinct species, calling the *Syalita*, *Dillenia speciosa*, and the *Songium*, *D. elliptica*; but the only difference, which he marks, is, that the former has *folia oblonga, rotundato-acuta*, while the latter has *folia elliptico-ovata, acuta*. These differences are not well defined; and I must confess myself unable to comprehend what a *folium rotundato-acutum* means. From the notes sub-

joined it would however seem to be the same with *folium obtusum eum acumine*; but in looking at Rheede's figure there is no such appearance, and the leaves of the *Syalita*, as figured in the *Hortus Malabaricus*, are more clearly marked as *elliptica*, than those of the *Songium*, which are nearly *lanceolata*. On the whole, after comparing the descriptions of Rheede and Rumphius with a plant very common in India, I can see no essential difference, and therefore adhere to the opinion of Linnæus, in considering the *Syalita* and *Songium* as one plant. Willdenow however (*Sp. Pl.* ii. 1251, 1252.) and M. Poiret (*Enc. Meth.* vii. 150, 151.) adopt the opinion of Thunberg, but entirely on his authority, neither of them having seen the plant.

I shall here take an opportunity of describing three Indian *Dillenias*, although each may have been already described; for it is of advantage to have accounts from different persons, and I have deposited specimens in the library at the India House.

1. *Dillenia pentagyna*. *Willd. Sp. Pl.* ii. 1251. *Hort. Kew.* iii. 329. *Hort. Beng.* 43. *Enc. Meth.* vii. 150.

Ban' Chalta Hindice.

*Habitat* in Indiæ aridioris sylvis.

*Arbor* mediocris. *Ramuli* crassi, teretes, cicatricibus lunatis exasperati. *Folia* decidua, post flores Junio erumpentia, conferta, alterna, oblonga, basi acutiuscula, apice nunc obtusa, tunc acuta, supra pilis incumbentibus aspersa, subtus nuda, costata, venis minutissime reticulata, apicibus costarum prominentibus dentata. *Petiolus* amplexicaulis, brevissimus, margine membranaceo basin versus dilatatus, supra concavus, non stipulaceus.

*Gemmae florales* supra cicatrices petiolorum anni præteriti enatæ, squamosæ, pubescentes, multifloræ. *Pedunculi* plures, congesti, uniflori, teretes, glabri, longitudine floris. *Bractea* nullæ,

nullæ, nisi gemmarum squamas volueris. *Flores* odorati, magnitudine florum Mali, flavi, ante folia vere prodeuntes.

*Calyx* quinquepartitus, laciniis patulis, crassis, ovalibus, concavis, obliquis, imbricatis, apice subciliatis. *Petala* quinque, calyce duplo longiora, obovata, undulata, tenuia, caduca. *Filamenta* plura, linearia; exteriora indefinita, brevissima, incurva; interiora decem, elongata, apice recurva; antherarum loculi bini lineares, apicibus filamentorum longitudinaliter adnati. *Germina* quinque, conica. *Styli* totidem subulati, recurvi. *Stigmata* simplicia, acuta.

*Fructus* magnitudine Cerasi majoris, globosus, basi umbilicatus, glaber, flavus, constans e calyce succulento, clauso, imbricato, capsulas tegente quinque conniventes, succulentas. *Semina* in singulis capsulis duo vel tria, angulata.

Like all the other species of this genus the young plants have enormously large leaves, such as are well described by Rumphius in treating of the *Songium*. The only other genus, at least among the *Dicotyledones*, that is equally remarkable in this respect, so far as I know, is the *Artocarpus*, in which the leaves of the young plants are not only of an enormous size, but of quite a different shape from those of the adult.

2. *Dillenia aurea*. *Enc. Meth. Sup.* v. 145?

Dhengr Hindice.

*Habitat* in Mithilæ sylvis ad Nepalæ limites.

*Arbor* magna ramis crassis cicatricosis, ramulis nudis. *Folia* alterna, decidua, oblongo-ovata, basi sæpius obliqua, nervorum apicibus productis denticulata, acuta, nervis parallelis ultra medium simplicissimis costata, venis parallelis reticulata: juniora utrinque pilis mollibus brevibus pubescentia. *Petiolus* amplexicaulis, semiteres, margine acutissimo membranaceo auctus, non stipulaceus.

*Gemma*



*Gemma terminalis*, imbricata, squamis quatuor vel sex coriaceis obtusis, quibus reflexis prodit pedunculus unus crassus nudus obtusangulus uniflorus, et ex hujus latere ramulum foliosum foliis equitantibus post florescentiam explicatis. *Flores* Dilleniæ speciosæ iis paulo minores, flavi.

*Calyx* monophyllus, patulus, crassus, ultra medium 5—7-fidus laciniis concavis, obtusis, margine tenuiore ciliato obliquis, imbricatis. *Petala* tot quot calycis laciniæ obovatæ, calyce multo longiora, plicata, venosa, ungue crasso in discum hypogynum planum inserta. *Filamenta* plura, indefinita, subulata, disco inserta quorum exteriora erecta breviora, interiora apice recurva; antherarum loculi discreti, margini utroque filamenti longitudinaliter adnati, ejusque plusquam dimidium occupantes, apice dehiscentes. *Germina* octo vel novem, coalita in corpus ovatum glabrum, sulcis interstincta. *Styli* totidem subulati, recurvi, supra sulco exarati. *Stigmata* acuta, simplicia.

*Fructus* magnitudine Pomi minoris, lævis, odore Mangiferæ, flavus, subrotundus, constans e capsulis baccatis tectis calyce clauso, imbricato, carnosò, succo viscido scatente. *Capsulæ* octo vel novem circa receptaculum commune centrale confertæ, parietibus mollibus baccatæ, vix dehiscentes. *Semina* nonnulla angulo interiori capsularum insidentia, obovata.

I am uncertain whether or not this be the plant meant by M. Poiret, as I have not at hand the *Exotic Botany* of our worthy President, which contains a figure of the *Dillenia aurea*.

3. *Dillenia pilosa*. *Hort. Beng.* 43?

Daine Oksi Bengalensium.

*Habitat* in Camrupæ montibus.

*Arbor* magna. *Rami* teretes, pubescentes, cicatricibus exasperati.

rati. *Folia* alterna, oblonga, apicem versus latiora, utrinque acuta, costarum apicibus productis denticulata, costis et nervis parallelis ad angulos rectos se intercipientibus reticulata, utrinque scabra, subpubescentia. *Petiohus* basi dilatatus, compressus, supra planus, marginatus, brevissimus, pubescens, non stipulaceus.

*Peduncululi* uniflori, e gemmulis anni præteriti lateralibus sæpius ternati, teretes, glabri, flore breviores, quorum unus sæpius longior, medio foliolis oblongis obtusis duobus vel tribus bracteatus, infra bracteas pilosus. *Flores* Calthi magnitudine, flavi.

*Calyx* quinquepartitus, laciniis oblongis, obtusis, concavis, patentissimis, apice subciliatis, duplice serie positus. *Petala* hypogyna, patentissima, unguiculata, calyce duplo longiora, tenuia, undulata, oblonga, obtusa, obliqua. *Filamenta* plura, quorum exteriora patentissima, decem interiora erecta. *Antheræ* lineares, utrinque dehiscentes, exteriores assurgentes, interiores stellatim patentes. *Germine* supra quinque. *Styli* totidem breves. *Stigmata* antherarum interiorum situ et magnitudine similia.

*Capsulæ* quinque, tectæ calyce clauso cerasiformi, intus humore crystallino scatente.

I only judge this to be the *Dillenia pilosa* of Dr. Roxburgh from its having been brought from Goyalpara by Mr. R. Kyd, who in 1810 was, on my representation, sent to examine the forests in that vicinity, and who was especially directed to inquire after the *Daine Oksi*, as specimens of its timber which I had sent to Calcutta were found to possess valuable qualities. It is likely, therefore, that he would send growing plants to the Botanical Garden.

The genus *Dillenia* is one of the most natural and well-defined that

that I know ; yet in the number of parts, and even structure of the most essential organs, such as the antheræ, there are great differences existing between different species ; which shows the impropriety of founding new genera on differences of number, or even of structure in minute parts, however essential, where there are no corresponding differences in habit or general appearance.

BLATTI, p. 43. tab. 40.

Both Rheede and his commentator considered this as a species of *Eugenia*, to which it no doubt has some affinity, although this is not very striking. No further notice, except a slight one by Camelli published by Ray, was taken of this plant, until Rumphius described it under the name of *Mangium caseolare* (*Herb. Amb.* iii. 111.), without however noticing its being the *Blatti* of Rheede. This, indeed, is done in the observation annexed by Burman, 113, who says that Rumphius noticed the identity of the plants ; but I have not discovered where he says so. Rumphius divides the *Mangium caseolare* into two kinds ; *album*, figured in *tab.* 73, and *rubrum*, figured in *tab.* 74. The only difference, however, which he mentions is, that the former has round, and the latter quadrangular branches : “Ejus (*M. cas. rubri*) ramuli non sunt rotundi, sed quadrati, et quasi alati, ita ut oras gerant acutas :” and in fact the figure (74.) represents the branches of this form, while in *tab.* 73 they are round. This difference, I suspect, is not to be relied upon as sufficient ; for in the plants which I have seen, both on the banks of the Ganges and of the Erawadi, the description of Rheede is perfectly applicable : “Rami et surculi teneriores quadranguli—vetustiores vero alis privati ac rotundiores,” as may be observed in the specimens from the Ganges which I have deposited in the library at the India House. One circumstance, however, might seem to indicate some difference between the plants of Rheede and Rumphius.

phius. In the rivers of Malabar, as well as in the Ganges and Erawadi, it grows on slimy banks; while in the Moluccas it is found on rocky shores.

In his unnatural genus *Rhizophora*, Linnæus included without distinction both the plants of Rumphius, calling them *R. caseolaris*; but, for what reason I know not, the *Blatti* is not quoted (*Burm. Fl. Ind.* 108.). M. Sonnerat in his *Voyage to New Guinea* gave a figure of this plant, calling it *Pagapate*, evidently the same with the *Bagatbat*, by which name it is mentioned by Camelli. The younger Linnæus then became sensible that this plant could not be continued as a *Rhizophora*, and called it *Sonneratia acida*. M. Lamarck divides this into two varieties; the *rubrum* of Rumphius, which he considers as the *Blatti*, and the *album* of Rumphius, which he makes a second variety: but, as I have said, the difference probably consists merely in the age of the branch; the young ones in flower being quadrangular, while those in fruit are rounded. This also seems to have been the opinion of Willdenow (*Sp. Pl.* ii. 999.), who quotes both the 73rd and 74th table of Rumphius, without establishing two varieties. Gærtner, however (*De Sem.* i. 379. t. 78. f. 2.), for his *Aubletia caseolaris* cites only the *Mangium caseolare album* (tab. 73.); and neither quotes the *Mungium caseolare rubrum* of Rumphius, nor the *Blatti* of Rheede. At the time, however, he would not seem to have known the change that had been introduced by the younger Linnæus: and subsequent authors have considered (*Willd. ubi supr. Enc. Meth. Sup.* i. 641.) Gærtner's *Aubletia* as the *Sonneratia acida*.

In Bengal this plant is called *Ourchaka*, which has no resemblance to *Ambetti*, the name used by the Brahmans of Malabar, probably from the fruit being used as an acid seasoning, like that of the *Mangifera*, which they call *Ambo*; and this in the

feminine would be *Ambetti*. On the Erawadi this tree is called *Lan-bu*.

In the same places with the *Sonneratia acida* I found another tree, which in habit so strongly resembles it, that, notwithstanding considerable differences in fructification, I think it cannot be separated; and Dr. Roxburgh, to whom I showed it on my return from Ava in 1796, was of the same opinion. I call it *Sonneratia apetala*; and Dr. Roxburgh has adopted the same name (*Hort. Beng.* 39.); under which name I sent home specimens and a drawing, now probably in the collection of the late Sir Joseph Banks; and I have since given others to the library at the East India House, where also a copy of the drawing may be seen. This tree the Bengalese call *Kheora*, and the people of Pegu *Kam-ba-la*, neither acknowledging it to belong to the same genus with the *Sonneratia acida*. Although very common among the estuaries of the Ganges, and very beautiful, having a general resemblance to the *Salix babylonica*, it would seem to have escaped the notice of botanists; so that until my return from Ava, Dr. Roxburgh had not observed it, although it grows in the immediate vicinity of the Botanical Garden, in which, however, he had not then taken up his residence.

*Sonneratia apetala.* *Hort. Beng.* 39.

*Habitat* in Bengalæ et regni Peguensis ripis cœnosis æstu inundatis.

*Arbor* mediocris. *Radix* cornicula plura emittit simillima corniculorum e *Sonneratia acida* prodeuntium. (Vide *Herb. Amb.* iii. 112.) *Rami* sparsi, penduli, teretes, glabri. *Ramuli* oppositi, divaricati, glabri, filiformes. *Folia* opposita, petiolata, ovato-lanceolata, marginum altero gibbosiore obliqua, integerrima, sæpiùs obtusa, enervia, avenia, plana, carno-

carnosiuscula. *Petiolus* linearis, anceps, brevis, glaber, non stipulaceus.

*Flores* magnitudine nucis moschatae pedunculati, cernui, herbacei, glabri: laterales axillares solitarii, terminales subterni. *Pedunculi* folio dimidio breviores, penduli, uniflori, nudi, glabri, apicem versus incrassati, angulati, articulis 1—3 divisi.

*Calyx* inferus, monophyllus, coriaceus, crassus, campanulatus, ultra medium quadrifidus laciniis ovatis patulis acutis, fundo tectus disco crasso integro staminifero ultra calycis divisionem producto. *Filamenta* plurima, indefinita, linearia, longitudine calycis incurva, ad disci marginem inserta. *Antheræ* parvæ, cordatæ. *Germen* turbinatum. *Stylus* teres, staminibus longior, medium versus angulo duplice flexuosus. *Stigma* maximum, supra convexum, subtus concavum, pileiforme.

*Pomum*? orbiculatum, depressum, calyce patente ad basin cinctum, stylo persistente mucronatum, septis tenuibus carnosis in loculos circiter octo, putamine lignoso extra cinctos, obsolete divisum. *Semina* angulata, in pulpo nidulantia.

PANITSJKA MARAM, p. 45. tab. 41.

Commeline in his annexed note considers this as the same with the *Janipaba* of Piso, a plant of Brazil, which Linnæus called *Genipa*, but by Willdenow joined to the *Gardenia*. Whether or not this last arrangement be proper I need not here inquire, because the *Janipaba* is no doubt a plant of the order of *Rubiaceæ*, with opposite leaves, while the leaves of the *Panitsjika* are alternate. Plukenet, although not aware of Commeline's error, judged more soundly concerning the affinities of the *Panitsjika*; for in treating of the *Pishamin* of Virginia (*Alm.* 180.), the *Diospyros virginiana* of Linnæus, he says (*Mant.* 99.), "Inqui-

rendum propono, an *Panitsjika-maram*, i. e. *Janipaba Pisonis* ut censet Commelinus, sit de hujus genere (*Diospyros nempe*) plantarum, vel non ;” and again, treating of the *Genipat* of the Antilles, misled by the authority of Commeline, he says, “*Janipaba Pisonis* ab hac diversa est, et fortè idem cum *Panitsjika*, quæ potius de Anonarum seu Mespilorum *Sappadillia* dictorum genere est, ut mecum existimo.” Now, although he was probably wrong in considering the *Janipaba* different from the *Genipat*, because the latter is quite different from the *Panitsjika*, yet he pointed out an affinity in the *Panitsjika* to the *Sappadillia* or *Achras*, which, although one of Jussieu's *Sapota*, has certainly a considerable affinity to the *Guajacana*, to which the *Panitsjika* belongs.

M. Desrousseaux (*Enc. Meth.* iii. 171.), although he acknowledged the resemblance which this tree bears to a *Diospyros*, considered its character, as given by Rheede, to point out its being a *Garcinia*, and accordingly calls it *Garcinia malabarica*.

Gærtner (*De Sem.* i. 145. t. 29. f. 2.), although he did not quote the *Panitsjika*, is generally supposed to have described it under the name of *Embryopteris peregrina*, and to have probably been misled by the representation of the fruit at the bottom of the plate in the *Hortus Malabaricus*, which by some mistake is drawn inverted, and by the expression in the description, *Fructus in vertice umbilico præditi*. Owing to these circumstances, he imagined that the fruit was crowned by the calyx, in place of being contained in it; and of course could not consider it as a *Diospyros*. Dr. Roxburgh, unwilling to change the generic name given by so good a botanist, when he published his *Flora Coromandeliana*, although perfectly aware of the situation of the calyx, called the plant *Embryopteris glutinifera*,—a name and genus continued by Willdenow (*Sp. Pl.* iv. 836.), although it is by no means certain that he has not described the same plant

plant under the name of *Diospyros discolor*. This is the *Cavanillea Mabolo* of Lamarck (*Ill. Gen. t. 454.*), and the *Cavanillea Philippensis* of M. Poiret (*Enc. Meth. Sup. ii. 135; iii. 566.*). The latter seems to be of this opinion: yet, although the leaves vary much in form, I have some doubt whether the *Mabolo* is the same species with the *Panitsjika*; because the former has only four or six seeds, and is hairy; while the latter has eight or ten, and is quite smooth. Concerning the genus there can be no doubt. Brown (*Nov. Holl. i. 525.*) and Dr. Roxburgh finally abandoned *Embryopteris* altogether, and called this plant *Diospyros glutinifera* (*Hort. Beng. 40.*); while Persoon, converting the generic into a specific name, calls it *Dyospyros Embryopteris* (*Enc. Meth. Sup. iii. 566.*), which savours too much of botanical Greek, and might lead one to suppose that it was a Fern.

I have already mentioned that the *Mabolo* can scarcely be of the same species with the *Panitsjika*, on account of its roughness and the number of seeds in its fruit. In the woods south of the Ganges I found a tree, which in the catalogue of specimens presented to the library at the India House (No. 2389) I have called *Diospyros exculpta*, on account of its leaves being as it were carved on the upper side. This, both in number of seeds and pubescence resembles the *Mabolo*, and may be the same, although its leaves are much blunter than represented in M. Lamarck's figure. This, however, is uncertain: and it must be observed that I saw only the male flowers, while the description by M. Desrousseau (*Enc. Meth. iii. 664.*) refers to the hermaphrodite, which will account for some differences. Dr. Roxburgh, however, received a *Mabolo* from the Philippines, which he considered different from the *Diospyros tomentosu* of Bengal; and this perhaps is the tree I am going to describe, although the natives



natives whom he consulted gave it quite a different name (*Tumala*) from those I employed.

*Diospyros exculpta*.

*Diospyros discolor*. *Willd. Sp. Pl.* iv. 1108?

*Diospyros tomentosa*. *Hort. Beng.* 40?

*Diospyros Mabolo*. *Hort. Beng.* 40?

*Cavanillea philippensis*. *Enc. Meth.* iii. 665?

*Cavanillea Mabolo*. *Lamarck Ill. Gen. t.* 454?

Kend Hindicè.

*Habitat* in Indiæ Gangeticæ australioris sylvis.

*Arbor* parva, cuticula crassissima longitudinaliter rimosa. *Ramuli* tomentosi. *Folia* alterna, ovalia vel elliptica vel subrotunda vel obovata, nunc utrinque acuta, tunc apice obtusa, integerrima, costata, supra nuda et venis depressis quasi insculpta, subtus tomentosa. *Petiolus* brevissimus, teres, pilosus, non stipulaceus.

*Flores* dioici. In masculina arbore pedunculus longitudine petioli axillaris, vel basin versus ramuli lateralis, tomentosus, subtriflorus; flores parvi, albi.

*Calyx* tomentosus, ore 4- vel 5-lobo erecto obtuso turbinatus. *Corolla* ore clauso 4- seu 5-lobo monopetala, calyce duplo longior, oblonga, utrinque angustata, pilosa. *Filamenta* 15 circiter setacea, disco calycino inserta. *Antheræ* erectæ, mucronatæ, inclusæ.

*Bacca* ovalis, calyce crasso sexfido tomentoso brevi insidens, pilis rigidis rufis tecta, seminibus varie abortientibus subquadriocularis.

The fruit, when ripe, is sweet and not very bad tasted. In the heart of some trees, but not in all, is found a black, hard, heavy substance,

substance, which at Mungher is called *Batti*, and at Saseram *Abnus*. The latter word is, I believe, of Persian origin, and the source from which our Ebony is derived.

One of the most common trees in the dry woods of Mysore differs so little from the preceding, that I have little doubt of its being the same. In 1806 I gave specimens of this to Sir J. E. Smith, under the name of *Diospyros Tupru*; and I shall here describe the flower, which I found on both the male and hermaphrodite trees; and this will show that the difference between the inflorescence of the *Kend*, as described above, and of the *Mabolo*, as described by M. Desrousseaux, is not sufficient to distinguish them as species.

*Diospyros Tupru*.

Tupru Carnatæ. *Buchanan's Mysore*, i. 183.

*Habitat* in Carnatæ aridioris sylvis.

*Planta* omnino ut in *D. exculpto*.

*Flores* *diclines*; in una arbore sessiles, hermaphroditi et masculini mixti; in altera pedunculati, omnes masculini. In priore flores sessiles, tomentosi, solitarii, squamis 3 seu 4 bracteati.

*Herm.*—*Calyx* campanulatus, crassus, sexfidus laciniis ovatis, obtusis, margine revoluto, intus membrana connatis. *Corolla* monopetala ore sexfido. *Filamenta* sex brevissima, hypogyna. *Antheræ* oblongæ, acutæ, simplices. *Germen* superum, ovatum. *Styli* tres brevissimi, crassi. *Stigmata* simplicia. *Bacca* calyce cupuliformi infra arcte cincta, magna, hirsuta, umbilicata, mucronata, quadrilocularis. *Semina* solitaria, amygdaliformia.

*Masc.*—*Calyx* et *corolla* ut in hermaphrodito. *Filamenta* novem brevissima. *Antheræ* simplices, subulatæ, erectæ, inclusæ, nescio

nescio an non steriles? Rudimentum *pistilli* in fundo calycis hemisphæricum, setis undique obsitum.

In arbore masculina pedunculus axillaris, recurvus, incrassatus, petiolo paulo longior, tomentosus, solitarius, 3- seu 4-florus. Flores albidii, cernui, extra tomentosi, squamis geminis ovatis minutis bracteati.

*Calyx* cyathiformis, laciniis ovatis obtusis planis quinquefidus. *Corolla* campanulata, oblongo-ovata, calyce multo longior, ore patulo, et laciniis obtusis altero marginum exteriori obliquis quinquefida. *Filamenta* disco calycino inserta, circiter octodecem, brevissima, erecta, simplicia. *Antheræ* solitariae, mucronatae. *Germen* nullum.

The differences between this description taken in Mysore and that taken at Mungher are too trifling to establish even two varieties of one species. From the structure of the filaments, not only this plant, but the *Mabolo* should, according to the characters laid down by Brown (*Nov. Holl.* i. 525.), be more nearly allied to the *Paralia*, and even to the *Royena*, than to the *Diospyros*. These characters, however, seem rather insufficient to mark well-defined genera.

It must be observed that I have met with another tree of nearly the same name, which has a stronger resemblance to the *Panitsjika* than that above described. From its leaves being carved as it were in a similar manner, I have in the catalogue of specimens presented to the India Company's library (No. 2388) called it *Diospyros insculpta*; and, although I have not seen the flower, I shall here give a description.

*Diospyros insculpta.*

Kendu Bengalensium.

*Habitat* in Camrupæ orientalis montibus.

*Arbor* mediocris ligno albidio. *Ramuli* teretes, glabri. *Folia* alterna,

alterna, oblonga, basin versus latiora, basi acuta, apice acuminata, integerrima, lucida, nuda, subcostata, venis minutè reticulata. *Petiolus* brevissimus, depressus, corticosus, non stipulaceus.

*Bacca* solitaria, lateralis, pedunculo brevissimo insidens, basi calyce quadrifido tecta, magnitudine nucis Juglandis mucronata, cortice crasso succulento fibroso glutinoso quadrilocularis, loculorum uno sæpè abortiente. *Semina* solitaria, magna, verticalia, oblonga, hinc convexa, inde angulata. *Funis umbilicalis* ex apice fructus per seminis dorsum decurrens, basi que superatâ ramosus, ramis per seminis latera interiora reflexis. *Integumentum* crassum, coriaceum. *Albumen* durissimum, album. *Embryo* subcentralis, rectus. *Cotyledones*, altero minore, conduplicatæ. *Radicula* incrasata, supera.

The generic name *Kend* is also given, with a specific appellation prefixed, to another tree, which I think is the *Diospyros cordifolia* of Dr. Roxburgh (*Hort. Beng.* 40.), a name that has been adopted by other botanists (*Willd. Sp. Pl.* iv. 1111. *Enc. Meth.* v. 482. *Hort. Kew.* v. 479.). I have presented specimens of this tree to the library at the India House (*Cat.* No. 2391). In the Hindwi dialect of Behar it is called *Makar Kend*; but according to Dr. Carey, in the Bengalese dialect it is called *Bun Gab*, that is, the wild *Embryopteris*; yet it has no very striking resemblance either to this plant or to the others called *Kend*. This, besides, agrees entirely with Mr. Brown's character of *Diospyros*; and as the differences between it and the species already described may lead to a more proper discrimination of genera than at present exists among the *Ebenaceæ*, I shall here describe it.

*Diospyros cordifolia.*

Makar Kend Hindicè.

*Habitat* in sylvis Magadhæ montosis.

*Arbor* ramulis annotinis rigidissimis, spina valida terminatis.

*Ramuli* novelli inermes, pubescentes. *Folia* oblonga, superiora acuta, inferiora obtusa vel etiam emarginata, basi retuso subcordata, nunc ferè ovata, tunc ferè linearia, integerrima, costata, subquinenervia, venosa, supra nuda, subtus pubescentia. *Petiolus* brevissimus, depressiusculus, pubescens, non stipulaceus.

Masculinæ arboris *pedunculi* axillares, petiolo paulo longiores, 1—4-flori, apice nutantes, tenues, pubescentes. *Flores* ad apicem pedunculi communis subsessiles, parvi, lutei. *Bracteæ* minutæ.

*Calyx* pubescens, laciniis acutis apice patulis quadrifidus. *Corolla* campanulata, limbo quadripartito revoluto, et laciniis subrotundis obliquis divisa. *Filamenta* octo brevissima, bifida, basi tubi insidentia, sparsa. *Antheræ* sexdecim, acuminatæ, inclusæ. *Pistillum* nullum.

Hermaphroditæ arboris flores non vidi. *Pedunculus* fructiferus axillaris, solitarius, monocarpus, petiolo paulo longior, ebracteatus. *Bacca* magnitudine Pruni mediocris globosa, flava, glabra, calyce quadrifido parvo reflexo cincta. *Cortex* crassa, e pulpo non separabilis, intus mollis, extra duriuscula. *Pulpa* octolocularis, odore Genistæ fœtida, amarissima. *Loculi* monospermi. *Semina* sæpius quatuor, abortivis totidem, arillo carnoso vestita, oblonga, compressa, intus acutangula, apice acutiora, fasciculis striarum quatuor notata, polita, castanea. *Integumentum* durum. *Albumen* forma seminis corneum, sulcis integumentorum insculptum,  
sub-

subhyalinum. *Embryo* centralis, rectus. *Cotyledones* planæ, ovales, æquales. *Radicula* longa, supera.

The most essential difference between this fruit and that of the *Diospyros insculpta* is, that the cotyledons of the latter are folded, while those of *D. cordata* are plain. Should this difference be found general between the species with distinct filaments and those with filaments united by pairs, especially if the distinction should be accompanied by any remarkable difference in external appearance, such as between the *D. insculpta* and *D. cordata*, there might be room for distinguishing *Diospyros* from *Cavanilla*.

I have presented to the same collection (*Cat.* No. 2387) another kindred species, of which I have seen only the male flowers. These have a structure very similar to that of the *D. Mabol* or *D. exculpta*.

*Diospyros* Toposia.

Toposi Bengalensium.

Colitur ad Camrupæ pagos, ob flores fragrantés dilecta.

*Arbor* magna ramulis teretibus glabriusculis. *Folia* alterna, ovata vel ovato-oblonga, basi acutiuscula, acuminata, integerrima, vix costata, venis minutissimè reticulata, utrinque glaberrima, supra lucida. *Petiolus* brevissimus, supra concavus, non stipulaceus.

In arbore masculina *pedunculi* plerumque ex foliorum axillis in ramulo imorum, vel infrafoliacei, solitarii, 2- seu 3-flori, brevissimi, teretes, vel aliquando terminales, multiflori, subpaniculati, vix bracteati. *Flores* mediocres, lutei.

*Calyx* parvus, 2—4-fidus, obtusus, petalo arcte adhærens. *Corolla* carnosâ, ore quinquefido ovata. *Lacinie* cordatæ, altero laterum interiore obliquæ. *Antheræ* plures, indefinitæ, e basi corollæ subsessiles tetragonæ, acutæ, latere

utroque longitudinaliter dehiscentes. *Germinis* in corollæ fundo rudimentum depressum.

NÏRVALA, p. 49. tab. 42.

Commeline in his note mentions the resemblance between this tree and the *Tapia* of Brazil described by Piso; but he only says, "Putamus duas hasce arbores, si non easdem, saltem esse species persimiles." Plukenet (*Alm.* 34; *Phyt. t.* 137. f. 7.) described what he called *Apioscorodon*, on account of its having the smell of Garlic, and seems uncertain whether he should refer it to the *Nürvala* of India or *Tapia* of Brazil. He had also procured another plant from America, which he called *Arbor Americana triphylla, numerosis staminulis, purpureis apicibus præditis floris umbilicum occupantibus* (*Alm.* 47; *Phyt. t.* 147. f. 6.), which he also refers with doubt to the *Nürvala*; thus probably implying that he considered all the three as belonging to the same genus.

In the *Flora Zeylanica* (211.) Linnæus mentions the *Nürvala* from a drawing taken in Ceylon by Hermann, and considered it as without doubt the same with the first plant of Plukenet, which in the *Hortus Cliffortianus* he had called *Cratæva inermis*; but the *Nürvala* has not the smell of Garlic: *folia manibus confricta suaveolentia—florum odor suavissimus et vinosus—fructus odoris vinosi*: while the leaves of the American plant, as represented by Plukenet, are much broader in proportion to their length than those of the *Nürvala*. But further, Linnæus along with the *Tapia* of Brazil and the *Nürvala* of India, joined the second plant of Plukenet, above mentioned, from Jamaica; for although he does not quote Plukenet twice, he quotes a plant described by Sloane and Ray, which is no doubt the same with that of Plukenet; and this also has the smell of Garlic. The younger Burman (*Fl. Ind.* 109.), although Linnæus in the *Species Plantarum*

*tarum* called the plant *Crateva Tapia*, denoting thereby that he meant the American plant, continued to quote the *Nürvala* as synonymous. Besides this error, both authors fell into one infinitely worse, by placing the *Tapia* and *Nürvala* in the same genus with the *Covalam* already mentioned; the former belonging to the order of *Capparides*, while the latter is one of the *Aurantiaë*. The circumstance which seems to have misled Linnæus was, that the *Covalam* was called *Belou* by the Brahmans of Malabar, while the *Nürvala* is their *Rana Belou*. When Linnæus published the second edition of the *Species Plantarum*, he separated the plant of Jamaica, calling it *Cratæva gynandra*; and Willdenow (*Sp. Pl.* ii. 853.) separated the *Nürvala* from the *Tapia* of Brazil, and joined it to the *Cratæva religiosa* of Forster and Vahl, of which a figure is given by M. Lamarck (*Ill. Gen. t.* 395.). Although he is followed in this by M. Poiret (*Enc. Meth.* vii. 582.), yet I suppose that this is an erroneous opinion, as the berry of the *Cratæva religiosa* is described and represented as globular, and no larger than a small plum, and the leaves as still smaller and shorter than those figured by Plukenet.

I have already observed what an unnatural genus the *Cratæva*, as left by Linnæus, must be considered; and Dr. Roxburgh wished to abolish it altogether. He therefore not only removed the species (*Marmelos*) belonging to the order of *Aurantiaë*, but the remaining plant, that he knew, he considered as a mere *Capparis*, which he called *trifoliata* (*Hort. Beng.* 41.). Whoever, in fact, endeavours to point out an essential character common to all the species of *Capparis*, will find it a difficult matter to exclude the *Cratæva*. Linnæus seems to have attempted it, by removing the *Cratæva* to the class *Dodecandria* from the class *Polyandria*, where he at first placed it close by the *Capparis*; but this is trifling: one undoubted *Capparis* has only nine stamina, and in several *Cratævas* the stamina are fully



as numerous as in any *Capparis*. The appearance of the *Cratæva* is however so different from that of the *Capparis*, that they cannot enter one natural genus; and I think the character by which they may be best distinguished is, that the *Capparis* has *petala sessilia*, and the *Cratæva*, *petala unguiculata*. Linnæus could not of course make use of this distinction, because the *petala* of the *Marmelos* are sessile. The flowers of the *Cratæva* also are polygamous, a large proportion being entirely male, with only a rudiment of the pistillum. Whether or not they are all diœcious I cannot say, but some are certainly so.

In the course of travelling, I observed that the specimens of the *Cratæva*, which I examined, differed considerably from each other, so as to lead me to suspect that in India there may be several species: but as I never afterwards was long enough stationary in one place to observe the same tree in all its stages, or to try the effect of different situations on the seed of the same plant, I am by no means certain that my suspicions are well founded. I shall however mention the circumstances by which I was induced to suppose that there are at least four species of *Cratæva* in the Gangetic provinces. This will at any rate throw light on the true generic character. Specimens of the whole have been deposited in the library at the India House.

I shall first describe a species which I met with in Behar, and which, I believe, is Dr. Roxburgh's *Capparis trifoliata*, because he does not quote the *Nirvāla* as synonymous, and because he thought it his plant when on my return from Ava I showed him specimens. If it were not for the long point at the end of the leaflets, their breadth would fully equal their length; including these points, the breadth is about half the length.

1. *Cratæva odora*.

*Capparis trifoliata*. *Hort. Beng.* 41?

Varuna

Varuna Hindicè.

Ka-dhæk Burmanorum.

*Habitat* in Indiæ locis montosis.

*Arbor* mediocris ramulis glabris. *Folia* alterna, ternata. *Foliola* petiolata, basi acuta, apice acuminatissima, glabra, costata, venis minutissimè reticulata; lateralia costis interioribus basin versus abbreviatis semiovata; terminale deltoideum. *Petiolus* communis longus, glaber, supra planiusculus, non stipulaceus; partiales brevissimi, marginati.

*Corymbi* indivisi, nunc laterales nudi, tunc terminales, et sæpè foliis nonnullis inter flores intermixtis comosi. *Pedicelli* sparsi, uniflori, incrassati, glabri. *Flores* magni, speciosi, odoratissimi; immaturi albidii; maturi flavi antheris purpureis.

In arbore hermaphrodita flores masculini pauci hermaphroditis intermixti; meram masculinam non vidi.

In hermaphrodito flore apex pedicelli dilatatus in receptaculum sublentiforme, concavum, e cujus margine prodeunt calycis foliola quatuor, herbacea, elliptica, sessilia, acutiuscula. *Petala* quatuor, calyce alterna, unguibus calyce longioribus insidentia, receptaculo intra calycem inserta, maxima, nervosa, ovata, obtusa, vel subrotunda. *Filamenta* viginti plura subulata, petalis longiora, basi stipitis germen suffulcientis inserta, basi subunita (unde cum Morisoniâ summa affinitas). *Germen* oblongum utrinque acutiusculum, stipiti filamentis longiori insidens. *Stylus* brevissimus. *Stigma* orbiculatum.

*Bacca* pedicello longissimo insidens, globosa, nuda, magnitudine pomi minoris rubra, cortice crasso molli tecta, pulpo molli repleta. *Receptacula* duo carnosa, longitudinaliter parietibus baccæ adnata. *Semina* pulpo tecta, subspiralia, crustacea.

tacea. *Albumen* nullum. *Embryo* teres, spiralis cotyledonibus hinc planis inde convexis.

In masculinis floribus cæteroquin simillimis stipites germinum brevissimi, cum pistilli rudimento in apicem insidente.

In the Rungpur district I found a small tree, or bush, which agrees so well with the figure given by M. Lamarck of the *Cratæva religiosa*, that, although I have not seen the fruit, I am inclined to think it the same. All the flowers that I saw were male; the tree therefore is no doubt diœcious. Its leaflets are not so much acuminate as in the species last described, and are nearly about half as long again as they are broad.

2. *Cratæva religiosa*. Willd. *Sp. Pl.* ii. 853; et *Enc. Meth.* vii. 582. (excluso synonymo *Lamarckii* Ill. *Gen.* t. 395.).

*Habitat* in locis Camrupæ elevatis.

*Corymbus* terminalis, erectus, angulatus, indivisus. *Flores* plures, alterni, pedicellis longis nudis, unifloris solitariis insidentes. Apex *pedicelli* dilatatus in receptaculum sublentiforme, e cujus margine duplici serie prodeunt perianthii foliola octo colorata, unguiculata, persistentia, venosa, hinc majora obovata, inde minora dimidiato-falcata. E medio receptaculi prodeit discum truncatum, lateribus staminiferum. *Filamenta* indefinita circiter sexdecim, petalis duplò longiora, foliola perianthii versus minora declinata. *Antheræ* parvæ. *Germen* nullum. *Styli* rudimentum e disci centro subulatum.

Near villages in different parts of the Rungpur district I found what may be another species, and which certainly, on account of the larger size of the fruit, is different from the *Cratæva religiosa* as delineated by M. Lamarck; and on account of the narrowness of the leaflets this has a great affinity to the *Nirvala*.

The

The Bengalese name is a mere corruption of *Varuna*, used in the Sanscrita and Hindwi dialect for the plant last described.

3. *Crataeva unilocularis*.

Borun Bengalensium.

*Habitat* ad Camrupæ pagos.

In masculina arbore petioli apex in discum explanatus. *Calycis* foliola quatuor, lanceolata, sessilia. *Petala* quatuor, deflexa, ovata, unguibus calyce longioribus insidentia. *Flores* ante maturitatem patentes parvi, herbacei: maturi flavi.

In hermaphrodita arbore calyx et corolla masculini. *Stamina* circiter sexdecim. *Germen* stipiti longo tereti insidens, oblongum. *Stigma* sessile, peltatum, truncatum.

*Fructus* omnino ferè Morisoniæ ut a Gærtnero descriptus. *Semina* pulpo tenacissime adhærente tecta, angulata, planiuscula, crusta tecta crassa fragili. *Albumen* nullum. *Embryo* curvatus, teres. *Cotyledones* amygdalino-carnosæ, subfoliaceæ, varie convolutæ.

All these are small trees growing in elevated situations; but the *Nürvala* grows to a very large size on the banks of rivers, which seems to be implied by *Nür* (*aqua*) prefixed to *Vala*, probably the real generic name in the Malabar dialect.

4. *Crataeva Nürvala*.

*Crataeva* Tapia. *Burm. Fl. Ind.* 109. (exclusis synonymis *Plukenetii*, *Commelini*, et *Sloani*.)

*Crataeva* inermis. *Linn. Fl. Zeyl.* 211. (exclusis synonymis *Plumieri*, *Margravii*, *Pisonis*, *Plukenetii*, *Sloani*, et *Raii*.)

*Nürvala*. *Hort. Mal.* iii. 49. t. 42.

*Varuna* Hindicè.

*Habitat* in ripis fluviorum Indicorum depressis.

This species is distinguished by the narrowness of its leaflets, each being from  $2\frac{1}{2}$  to 3 times longer than its breadth, by the long form of its berries, and by its numerous stamina. Rheede further says, “Fructus intus carne humida quadripartita;” which perhaps implies four placentæ, although in my notes I have not remarked this part of the structure.

On the banks of rivers in the Gorakhpur district I found a similar tree in flower; but its leaflets were rather shorter in proportion to their breadth, its flower was not odorous, and its stamina fewer; so that, although the natives said it had an oblong fruit, and although they called it *Varuna*, I have doubts of its being the *Nirvala*. It was however a male tree, with only a few hermaphrodite flowers intermixed, while the *Nirvala* of Rheede is an hermaphrodite; which may occasion a difference. I shall in the mean time, therefore, consider this as merely a variety of the *Cratæva Nirvala*.

*Petiolus* foliolis brevior, teres. *Foliolum* intermedium lanceolatum.

*Receptaculum* convexum, margine quadrilobum. *Calycis* foliola apicibus loborum insidentia, lanceolata. *Petala* e receptaculi incisuris acuta. *Filamenta* 12—15 disci superficiei superiori undique inserta. *Germen* sulcis quatuor exaratum. *Stigma*: concavitas in apice styli insculpta, hocque non latior.

TAMARA TONGA, p. 51. tab. 43, 44.

In a *Commentary* on the *Herbarium Amboinense* (i. 115.) I have said all that seems necessary concerning this tree.

BILIMBI, p. 55. tab. 45, 46.

In the same *Commentary* I have noticed nearly all that is necessary to be said concerning this plant. In India Proper it is

is an exotic, and not common any where that I have seen. From the name given to it by the Brahmans of Malabar it would appear to have come from Malacca.

NELI POULI seu BILIMBI ALTERA MINOR, p. 57. tab. 47, 48.

The Malabar generic name is *Pouli*; and *Neli*, prefixed as a specific appellation, implies a resemblance to the *Neli* or *Phyllanthus Emblica* of Linnæus, a more just and striking comparison than European naturalists for a long time pointed out; for they copied the error of Rheedee in considering it as of the same genus with the *Bilimbi*. *Pouli*, as a generic name, seems also to be used in the *Carca-puli*, which is mentioned in the first part of the *Hortus Malabaricus*, p. 42, as belonging to what is now called an *Oxycarpus*. The chief resemblance here is, that the fruits of the two trees are nearly of the same size, colour, and taste. Rheedee's classing it with the *Bilimbi* is very little if at all better. The name *Anwallis*, which he says is used by the Brahmans of Malabar, is probably derived from the Arabic *Ambela* (for the tree is no doubt an exotic in India Proper), and was probably introduced from the Eastern islands by the Arabs of Malabar, who traded to that quarter long before the arrival of Europeans.

Plukenet (*Alm.* 45.) thought that the *Neli Pouli* might be his *Arbor Malabarica Fraxini ferè folio, ossiculo fructus octangulari* (*Phyt.* t. 269. f. 2.), which would appear to be a *Bradleja*, and therefore to be at least of the same natural order; but it certainly is a different plant: and he is the less excusable in this error, because he had described the real *Neli Pouli* under the name of *Cheramei Acostæ folio Pyri* (*Mant.* 45.), a name that had been given to it by John Bauhin.

Rumphius (*Herb. Amb.* vii. 33. t. 17.) gives an excellent account of the tree under the name *Cheramela*, but does not class

it with any other. The elder Burman by a very rude classification calls the *Neli Pouli*, *Malus indica fructu parvo, rotundo, acido, striato*; and notices that the Ceylonese call it *Nelli*, the same name that is given to the *Phyllanthus Emblica*, a resemblance to which has been already mentioned.

Linnæus, in the *Flora Zeylanica*, 179, returned to the error of Rheede and Ray in classing it with the *Bilimbi*, and called it *Averrhoa ramis nudis fructificantibus, pomis subrotundis*: and when he gave specific names, the *Neli Pouli* was called *Averrhoa acida* (*Burm. Fl. Ind.* 106.), although it is less acid than either of the other plants with which it was then classed. In the *Mantissa*, 124, Linnæus described a plant called *Cicca disticha*, which, he says, has a capsular fruit; and which therefore may be the plant that Plukenet compared to the *Neli Pouli*,—that is, a *Bradleja*; but his son, notwithstanding this great difference, alleged (*Suppl.* 416.) that the *Cicca disticha* and *Averrhoa acida* are the same: and such is now the general opinion among botanists (*Willd. Sp. Pl.* iv. 332. *Hort. Kew.* v. 258. *Lamarck Ill. Gen. t.* 757. *f.* 1.), although M. Lamarck (*Enc. Meth.* ii. 1.) points out the difficulty which I have mentioned. Whether or not deterred by this, or whether attracted by the resemblance to the *Phyllanthus Emblica*, Dr. Roxburgh (*Hort. Beng.* 69.) quotes the *Neli Pouli* for his *Phyllanthus longifolius*: but I here suspect some mistake; for he says that its Bengalese name is *Lodh*, which is a plant used in dyeing, and never, so far as I know, applied to the *Cheramela*: besides, he has also a *Phyllanthus Cheramela* (*Hort. Beng.* 104.), to which, I suspect, the quotation from the *Hortus Malabaricus* should have belonged.

In the Rungpur district I have found a plant with leaves very like the *Neli Pouli*, which I suspect belongs to the real genus *Cicca*, as described by the elder Linnæus, and to which the *Cicca congesta* of Lamarck probably should be referred, but  
which

which cannot with propriety be classed with the *Cheramela* or *Cicca disticha* of the younger Linnæus and subsequent authors. In many respects it agrees with the genus *Agyneia* of Linnæus; on which account, in the catalogue of dried plants presented to the library of the India House (No. 2072) I have proposed it as an *Agyneia* with a mark of doubt.

*Agyneia?* tetrandra.

*Phyllanthus tetrandrus.* *Hort. Beng.* 69?

*Habitat* inter saxa in Camrupæ orientalis locis montosis.

*Frutex* duos pedes altus ramis bifariis. *Ramuli* pinnæformes, compressiusculi, pubescentes. *Folia* subsessilia, quasi pin-nata bifaria, ovata, uno laterum sæpe paulo latiore obliqua, utrinque pilosa, subtus albida, acuta, integerrima, venosa. *Stipulæ* parvæ.

*Flores masculini* ex axillis foliorum inferiorum congesti, plurimi, rubicundi. *Pedicelli* filiformes.

*Calyx* pubescens, patens, laciniis laceris ultra medium quadri-fidus. *Filamentum* turbinatum, centrale, apice tetragonum.

*Antheræ* quatuor subrotundæ, angulis filamenti adnatæ.

*Flores fœminei* ex axillis foliorum superiorum solitarii, vel ter-minales racemosi. *Pedicelli* brevissimi, setacei, incrassati.

*Calyx* quinquepartitus laciniis oblongis, acutis, coloratis, laceris. *Germen* echinatum. *Styli* tres bipartiti. *Stigmata* sim-  
plicia.

*Capsula* pisiformis, hirsuta, calyce erecto tecta, trilocularis, locu-  
lis dispersibus.

PANJA SEU PANJALA, p. 59. t. 49—51.

In a Commentary on the *Herbarium Amboinense* (i. 195.) I have mentioned most of what I had to say concerning this plant, with my reasons for adopting the name affixed to it in the collection presented



presented to the India House (*Cat. No.* 1526). I shall here annex the synonyma which seem to me really to belong to it.

Gossampinus alba.

Bombax pentandrum. *Hort. Kew.* iv. 196. *Hort. Beng.* 50.  
*Willd. Sp. Pl.* iii. 731: *Enc. Meth.* ii. 551. *Burm. Fl. Ind.*  
 145. (exclusis synonymis fortè ad plantam Americanam  
 pertinentibus, ut et *Plukenetii.*)

Ceiba pentandra. *Gærtn. de Sem.* ii. 244. t. 133. f. 1?

Xylon foliis digitatis caule inermi. *Linn. Fl. Zeyl.* 220.

Eriophorus Javana. *Herb. Amb.* i. 194. t. 80.

Panja seu Panjala. *Hort. Mal.* iii. 59. t. 49—51.

Arbor Gossampinus. *Plinii Hist. Nat.* l. xii. c. 10, 11:

Swet (alba) Shimul Bengalensium.

*Habitat* in Indiæ sylvis rariùs.

Gærtner neither mentions from whence he had the fruit, nor the manner in which it opens, which renders it doubtful whether he describes this or the American plant.

MOUL ELAVOU, p. 61. tab. 52.

This is one of the most common trees in India, and is remarkable in spring, when it has no leaves, for an immense quantity of bright red flowers. On this account it is most probably the *Arbor lanigera*, seu *Gossampinus Plinii* of Bontius. The cathartic powers which Rheede attributes to its roots and flowers are extraordinary in this tribe of plants, chiefly remarkable for a mild mucilage; and would seem, if well founded, to imply a necessity of separating it from the proper *Malvaceæ*.

On account of the prickles on the stem, the fallacious nature of which character I have noticed in commenting on the *Herbarium Amboinense*, Plukenet considered it as perhaps the same with his *Gossipium* seu *Xylon arbor occidentale digitatis foliis per marginem*

*marginem crenatis, fructu conoide quinquecapsulari, lanugine leucophæâ referto* (*Alm.* 172. *Phyt.* t. 189. f. 1.); but this is evidently an error, the leaflets of the American plant being toothed on the edges, while in the Indian plant they are quite entire. Rumphius and his commentator Burman, as I have said, seem strangely to have considered the *Pania* and *Moul Elavou* as the same plant, but evidently described only the former. Linnæus (*Fl. Zeyl.* 221.) united a plant of America with the *Moul Elavou*; but he does not quote Plukenet; and therefore his plant, which was then common in the gardens of Europe, might have the edges of the leaflets entire. This plant of Linnæus in the first edition of the *Species Plantarum* became *Bombax Ceiba* (*Burm. Fl. Ind.* 145.). In the second edition, however, the *Moul Elavou* having been found different from the American *Ceiba* described by Bauhin and Sloane, it was called *Bombax heptaphyllum*, and new synonyma were given. Among these was still an American plant described by Jacquin; and the *Gossypium s. Xylon arbor orientale digitatis foliis lævibus, fructu quinquecapsulari, alba et nitente lanugine farcto* (*Pluk. Alm.* 172. t. 188. f. 4.), which, although said to be an Asiatic plant, cannot well, on account of its stamina, be considered as representing the *Moul Elavou*. I suspect, however, that Plukenet was mistaken concerning the country from which he obtained his plant, for I have seen none such in India; and his figure is quoted by all for the tree of the West Indies. Besides, as Cavanilles observes (*Enc. Meth.* ii. 553.), Linnæus describes the plant as having a monopetalous corolla, while that of the *Moul Elavou* has five petals; and it is therefore probable that the plants are different. Willdenow, although he quotes the *Hortus Malabaricus*, probably meant some other plant, as he calls it an American: and in the figure of Plukenet, which he also quotes, there is no appearance of prickles in even the branch. Further, as in the *Hortus Kewensis*

*ensis* (iv. 196.) this figure of Plukenet is the only authority quoted, we may fairly infer that the proper *Bombax heptaphyllum* of European botanists is an American plant, and not the *Moul Elavou*, although it was probably the flowers of the latter which M. Cavanilles saw, and although it no doubt is the *Bombax heptaphyllum* of Dr. Roxburgh. It is certainly also one of the plants which must be referred to the *Gossampinus* of Pliny. I shall therefore call it

*Gossampinus rubra*.

*Bombax heptaphyllum*. *Hort. Beng.* 50.

*Bombax Ceiba*. *Burm. Fl. Ind.* 145. (exclusis synonymis ad plantam Americanam spectantibus.)

*Xylon foliis digitatis, caule aculeato*. *Linn. Fl. Zeyl.* 221. (exclusis synonymis omnibus nisi *Rheedii* et *Raii*.)

*Moul Elavou*. *Hort. Mal.* iii. 61. t. 52.

*Arbor Lanigera sive Gossampinus Plinii*. *Bontius, l. 6. c. 14.*  
*Hort. Mal.* iii. 60.

Rukta (rubra) Shimul Bengalensium.

*Habitat in India ubique vulgatissimè.*

BELUTTA TSJAMPAKAM, p. 63. tab. 53.

The comparison of this by the Dutch inhabitants of Malabar and naturalists to the Chestnut is an attempt at classification no better than that of the Hindus, who class it with the *Michelia Vatica*, *Ochna*, &c. &c.; for the word here written *Tsjampakam* seems to be the same with what is also called *Champaka*, *Champaca*, *Champacam*, *Changpa*, and even *Champa*, although this last is applied to several of the *Monocotyledones*: so that the plants to which it is given seem to have no other general character than that of producing showy and odorous flowers. The name *Naga Tampo*, said to be given to this tree by the Brahmans of Malabar,

Malabar, I suspect should have been written *Naga Champo*, the latter word being the same with the *Tsjampakam* of the vulgar dialect, while the specific term *Naga* implies that the tree is connected with the divine serpent, although it must be confessed, as we shall see, that another derivation is given.

Plukenet (*Alm.* 90.), adhering to the opinion of Commeline, called this tree *Castanea rosea Indica*. Linnæus (*Fl. Zeyl.* 203.) quoted it for the second variety of his *Mesua foliis lanceolatis*, his first variety being the *Arbor Naghas sive ferrea* of Burman (*Thes. Zeyl.* 25.). This author says, that in the Ceylonese dialect *Naghas* or *Naghaha* implies *Arbor ferrea*. *Ghas* or *Ghaha* no doubt signifies a tree or plant; but *Na* is quite different from any Indian name of iron that I know of; and I suspect that the name should have been written *Nag' Ghas* or *Nag' Ghaha*, the serpent's tree. I observe nothing in the account of Burman that should lead to a suspicion of his plant being in any respect different from that of Rheede. Willdenow has however joined it with the *Nagassarium* of Rumphius (*Herb. Amb.* vii. 3. t. 2.), which, if not a different species, is at least a very remarkable variety; as it is a small tree (*truncus non ultra sex pedes extensus*), with leaves less than those of the Willow, and like those of the Olive; nor has its fruit the four remarkable ribs so conspicuous on that of the *Belutta Tsjampakam*. So great indeed is the difference between the two plants, that the younger Burman considered them as belonging to two distinct genera (*Fl. Ind.* 121.), the plant of Rumphius being his *Calophyllum Nagassarium*, and that of Rheede his *Mesua ferrea*, as it is that of Linnæus. This supposition of the two plants belonging to different genera I have no doubt is an error; and the plant of Rumphius, which is pretty common in the North-east of Bengal and in Ava, is no doubt a *Mesua*, but I am inclined to think of a different species from the tree described by Rheede, which however I have not

seen. M. Poiret (*Enc. Meth.* iv. 416; *Sup.* iv. 56) it must be allowed makes no distinction. The plant of Dr. Roxburgh (*Hort. Bcng.* 41.) is that of Rumphius. Whether or not he ever saw that of Rheede I know not, but he does not quote the *Hortus Malabaricus*.

KAPPA MAVA, p. 65. *tab.* 54.

In my *Commentary* on the great work of Rumphius (*Herb. Amb.* i. 177.) I have said all that seems necessary on this subject.

ITTI ARE ALOU, p. 69. *t.* 55.

Commeline justly considered this as a *Ficus*. The Malabar name implies that the tree is an *Are Alou* (*Ficus religiosa*, Lin. *Trans.* xiii. 487.), having a resemblance to the *Itti* or *Itty Alou* (*Ibid.* 486.), which is perhaps the *Ficus Benjamina* of M. Lamarck (*Enc. Meth.* ii. 493.). The generic name *Goli*, given to this tree as well as to the *Itti Alou* by the Brahmans of Malabar, is probably the same with the *Gular* of the Hindwi dialect, given to several *Fici*. The word *Douadeke* prefixed seems to imply that its branches abound with milky juice.

Rumphius at first (*Herb. Amb.* iii. 140.) confounded the *Itty Alou* with his *Varinga parvifolia*; but, as I have mentioned in treating of that plant, this was an error; the *Itty Alou* bearing its figs on stalks, while those of the *Varinga parvifolia* are sessile; and, in fact, Rumphius was afterwards (*Append.* iii. 142.) sensible that he should have quoted the *Itti Are Alou*. On this account I should have considered Burman correct in quoting the *Itti Are Alou* (by the Latin name of Commeline) for the *Varinga parvifolia* (*Herb. Amb.* iii. 142. *in tabulæ explanatione*), were it not that Rumphius says, “fructus formam Grossulorum referentes, inferius nempe angustati, superius rotundi,” which in the Linnæan language would be *fructus obovati*; while Rheede describes

describes the fruit of his plant as *plano-rotundi*, which in Linnaean language is *depresso-globosi*; and both Willdenow and the authors of the *Encyclopédie* agree in considering the plants different.

M. Lamarck (*Enc. Meth.* ii. 495.) suspected, although with some doubt, that the *Itti Are Alou* might be his *Ficus punctata*; but Thunberg, properly rejecting this, calls it his *Ficus nitida*, in which he is followed by M. Poiret (*Enc. Meth. Sup.* ii. 653.) and Willdenow (*Sp. Pl.* iv. 1145.). I think that I have seen the tree on rocky hills both in the South of India and in the province of Behar. Specimens of the former, with a drawing, I gave to Sir J. E. Smith under the name of *Ficus Condaravia*, from *Konda (montana)* and *Ravi*, a generic name in the Telinga language; and I have given to the library at the India House specimens from Behar, where it is called *Khota Pipar*. I shall here annex a description taken in the latter country.

*Arbor* mediocris, lacte valdè scatens, ramulis obtusangulis glabris. *Folia* alterna, subovata, basin versus aliquando subcuneata, apicem versus sæpius acumine brevissimo obtuso angustata, integerrima, glabra, supra nitida, venis remotiusculis etiam ultra submarginalem reticulata, nervis apice incurvis prope marginem cingentibus subcostata. *Petiolus* depressiusculus, supra canaliculatus, glaber, brevissimus. *Stipulæ* spathaceæ, caducæ.

*Fici* geminæ, axillares, sessiles, pisiformes, nudæ, involucre brevi trilobo crasso insidentes.

In India gangetica radicantem non vidi; sed in India australi, ubi lætius crescebat, ramos habebat radican-tes.

TSJEROU MEER ALLOU seu ALOU, p. 71. *tab. 56.*

Rheede describes two species called *Meer Alou*; this, and the *Atte Meer Alou* mentioned in page 75: and the two plants are very nearly allied, both belonging to the natural division of the genus *Ficus*, which has pedunculated fruit; a circumstance generally connected with scabrous or very rigid leaves, having their sides either unequal or lobed or indented, while the species with sessile fruit have soft, entire, and equal-sided leaves. The resemblance between the two *Meer Alous* is striking not only to the vulgar of Malabar, but to the Brahmans, who give them both the generic appellation of *Parai*. The *Tsjerou Meer Alou* is the prototype of the genus *Parai*, having no specific name prefixed. It is quoted with doubt in Willdenow (*Sp. Pl. iv. 1145.*) for the *Ficus terebrata*; but as this has sessile fruit, we may safely reject the quotation, this circumstance, as I have said, being of the most essential importance in distinguishing the species of this genus. I at one time thought that it might be the plant of Rumphius figured in the 85th plate of the third volume, which in the explanation of the plate is called *Varinga rubra*; and this led me to suppose that it was the *Supa* or *Varinga rubens*: but I observe that this is an error, and that Rumphius describes no plant called *Varinga rubra*, while the 86th plate represents the *Supa*, a large tree. But plate 85 therefore represents no doubt the *Varinga repens*, a climber, which consequently cannot be the *Tsjerou Meer Alou*. I think it probable that the same erroneous explanation of the 85th plate led M. Lamarck (*Enc. Meth. ii. 497.*) to quote it, although with doubt, for his *Ficus pyrifolia* (not that of Burman, *Fl. Ind. 226.*), which therefore may be very nearly allied to the *Tsjerou Meer Alou*, although M. Poiret quotes this, in imitation of Willdenow, for *Ficus terebrata* (*Enc. Meth. Sup. ii. 645.*). I shall

shall now describe a plant which may perhaps be the *Tsjerou Meer Alou*, and of which I have given specimens to the library at the India House (*Cat.* 2416).

*Ficus undulata*.

Tsjerou Meer Alou. *Hort. Mal.* iii. 71. t. 56?

Rakhalpani Bengalensium.

*Habitat* in Camrupæ orientalis locis montosis.

*Arbor* magna, lactescens, ramulis nudis fuscis. *Folia* alterna, oblonga, basi acutiuscula, apice acuminata, integerrima, rigida, glabra, undulata, subtrinervia, subcostata, venis minutè reticulata. *Petiolus* semiteres, brevissimus, fuscus. *Stipulæ* caducæ.

*Racemus* axillaris, rigidus, simplex longitudine petioli apice gemmiferus, fructu foliis e gemma prodeuntibus laterali. *Pedicelli* gemini, uniflori, ancipites, glabri, receptaculo florum longiores. *Bracteæ* ad basin pedicellorum minutæ, triphyllæ. *Flos* obovatus, glaber magnitudine Pisi majoris.

I did not see this tree sending roots from its branches; but even the *Per Alou* does not do this when planted in confined situations and excluded from a free circulation of air. It remains, however, yet to be determined whether the *Tsjerou Meer Alou* is my *Ficus undulata* or the *Ficus pyrifolia* of M. Lamarck, if it be either.

ΚΑΤΟΥ ΑΛΟΥ, p. 73. t. 57.

Commeline supposed this to be the *Ficus Indica* of Clusius, and the *Ficus Indica foliis Mali Cotonei similibus, fructu ficubus simili* of Caspar Bauhin, that is, the *Ficus Indica* of the Greeks and Romans; and he supposed that it might be the same with an American plant described by Rochefort. In my Commentary on the *Peralu* (*Linn. Trans.* xiii. 488.) I have mentioned that  
these



these suppositions are liable to great objections, as was indeed noticed by Plukenet (*Alm.* 144.), although in writing that Commentary I did not attend sufficiently to what he said, and confounded together two of his plants, which, being placed next each other, I took for one,—an error which I beg leave now to correct. Plukenet mentions an affinity between the *Katou Alou* and his *Ficus arbor Americana, Arbuti foliis non serrata, fructu Pisi magnitudine, funiculis e ramis ad terram demissis prolifera* (*Phyt. t.* 178. *f.* 4.), now called *Ficus pedunculata* (*Willd. Sp. Pl.* iv. 1138.); but he says expressly, that Commeline erred in considering the *Katou Alou* as the *Ficus Indica*; and that the *Katou Alou* could not be the American plant which he described, because its fruit is much larger and its leaves hairy beneath; while the fruit of the American species being like Pease, and its leaves being smooth, it has a greater affinity to the *Tsjakela* of Rheede. In fact, this American tree is the *Ficus laurifolia* of M. Lamarck (*Enc. Meth.* ii. 495.), and perhaps the *Ficus venosa* of Willdenow (*Sp. Pl.* iv. 1136.); while the *Tsjakela* is the *Ficus venosa* of the *Hortus Kewensis* (first edition, iii. 451.), now called *Ficus infectoria*. The *Peralu*, indeed, which I agree with Dr. Roxburgh in thinking to be the true *Ficus Indica*, Plukenet referred, but with doubt, to another American plant, his *Ficus Americana, latiori folio venoso ex Curaçoa* (*Alm.* 144; *Phyt. t.* 178. *f.* 1.), which was then cultivated in the Royal Garden at Hampton-Court; and this in all probability is the tree which Linnæus, omitting the cautious doubt of Plukenet, called the *Ficus Benghalensis*, the barbarous name of which I complained. The figure of Plukenet (*Phyt. t.* 178. *f.* 1.) has no doubt a considerable resemblance to the *Peralu*; but the difference of the countries where they grow is so great, that much reliance cannot be placed on figures that represent neither flower nor fruit. The figure, besides, of Plukenet resembles fully as much the *Katou Alou* as the *Peralu*;

but

but as it has smooth leaves, it can be neither one nor the other. The proper synonyma of the *Peralu*, which Commeline referred to the *Katou Alou*, Plukenet (*Alm.* 144.) refers to his *Ficus Indica Tiliæ folio, subtus albo et villosa, polyrhizos, seu filamentis e summis ramis ad terram missis radicata*, which he procured from the sea-shore of Barbadoes, and of which a figure is given (*t.* 178. *f.* 3.); and with this also he confounds the *Pipul* of the Bengalese, although in *f.* 2. he gives a representation of this plant which cannot be mistaken. The plant of Barbadoes by M. Lamarck (*Enc. Meth.* iii. 352.) is referred to the *Hibiscus tiliaceus*, not without strong grounds; yet it is difficult to suppose such an error in Plukenet, especially as he no doubt represents the *Hibiscus tiliaceus* in another place (*Amalth.* vi. *t.* 355. *f.* 5.). I am therefore inclined to follow Willdenow in thinking the plant of Barbadoes to be at least a *Ficus* (*Sp. Pl.* iv. 1133.), although I doubt much of its being the *Sycomorus* of Egypt, as he supposes. The figure no doubt resembles a good deal that of the *Sycomorus Mathioli* in John Bauhin (*Hist. Plant.* i. 124. *f.* 1.);—but who ever heard of the Sycamore growing in Barbadoes as a Mangrove? This opinion originated probably with Burman (*Fl. Ind.* 225.); and I doubt as much of the fact of the *Sycamorus* being found in the East, as in the West, Indies. The plant that Burman mistook for it is probably what I take to be the *Ficus Caricoides* of Dr. Roxburgh (*Hort. Beng.* 65.), of which I have deposited specimens in the library at the India House.

Having thus endeavoured to correct the error into which I fell when treating of the *Peralu* and *Ficus Indica*, and to show that neither it nor the *Katou Alou* was known to Plukenet, I return to Burman, who, following the first edition of the *Species Plantarum*, gives us (*Fl. Ind.* 225.) the *Katou Alou* as the true *Ficus Indica* of the ancients, but without quoting any American plant as synonymous. He however adds as a variety the *Tsjela*,

to

which we shall soon have occasion to return. When, however, Linnæus published the second edition of his *Species Plantarum*, he added many other synonyma, and among these an American plant described by Catesby; from which alone, as M. Lamarck justly observes (*Enc. Meth.* ii. 495.), he seems to have drawn his specific character, this probably having been the only one of the plants quoted that he had actually seen.

M. Lamarck, therefore, returns to the first supposition of Linnæus, and gives the *Katou Alou* as the true *Ficus Indica*, referring to it all the synonyma of old botanists, who meant to describe the tree of Pliny and Theophrastus;—but what probability is there that a tree growing neglected in the obscure parts of the South, should be that noticed by the Greeks and Romans in the North of India, while in every part the *Peralu* is cultivated with a religious veneration? The very Malabar names show the difference: *Alu* or *Alou* being the generic name, *Per* signifies Tree, as if we should say *Arbor Alou dicta* by way of excellence; while *Katou* implies this species of *Alou* to be the *sylvestris*, to use the language of the older botanists. In the same manner the *Peralu* by the Brahmans of Malabar is called *Vadhou* (from *Vata* of the Sanscrit) by way of excellence; while the *Katou Alou* is distinguished by a specific term (*Doulo*) prefixed, to mark its not being the true prototype of the genus. I approve therefore entirely of the change made by Willdenow, who, although he knew nothing of the *Katou Alou* except from the *Hortus Malabaricus*, calls it *Ficus citrifolia* (*Sp. Pl.* iv. 1137.).

Dr. Roxburgh, so far as we can judge from the *Hortus Bengalensis*, would not seem to have seen any tree which he referred to the *Ficus citrifolia* or *Katou Alou*: but in the South of India I found a tree which I should have had no doubt was the same, had I ever seen roots descending from its branches; but this I never did, and the natives assured me that it does not possess  
this

this quality. I am inclined, however, to doubt the accuracy of their information; and the tree in other respects so nearly resembles the *Peralu* as to justify its being considered as the wild plant of the same species. In 1806 I gave specimens and a drawing to Sir J. E. Smith under the name of *Ficus Gonia*, and shall here give a description.

*Ficus citrifolia*. Willd. *Sp. Pl.* iv. 1137?

*Ficus indica*. Enc. *Meth.* ii. 495? (exclusis synonymorum pluribus.)

Arbor *Supa dicta*. *Herb. Amb.* iii. 135. t. 86?

Katou Alou. *Hort. Mal.* iii. 73. t. 57?

Goni Carnatæ Tamulorum et Telingorum.

*Habitat* ad pagos et vias Carnatæ rarius.

*Arbor* facie omnino *Fici Indicæ* (*Peralu*), sed radicantem nunquam vidi. *Ramuli* juniores tomentosi. *Folia* alterna sinu minuto subcordata, ovata, acumine brevi terminata, supra pilis fuscis, subtus villo denso vestita, costata, venis reticulata. *Petiolus* brevis, depressus. *Glandula* in dorso nervi medii paulo supra folii basin plana, glabra. *Stipule* gemmaceæ, hirsutæ.

*Fructus* geminus, sessilis, bractea triphylla cinctus, lævis, magnitudine *Nucis moschatæ* oblongus, aurantiacus, luteo punctatus.

The plant of Rumphius, mentioned with doubt among the synonyma, is very like indeed to what I consider as the *Ficus citrifolia*; and the strong resemblance which this has both to the *Supa* and *Peralu*, both certainly emitting roots from their branches, induces me to doubt the information on this point which I received from the natives. I have however seen a tree which I consider as not improbably the *Supa*; and, as it has

smooth leaves, I think it probably different from what I have above described; but this is not certain, as Rumphius does not say whether the leaves of the *Supu* are smooth or hairy. The proper place, however, for discussing this is in the *Commentary* on the *Herbarium Amboinense*.

Nearly allied to these plants I have met with two others still more hairy than the *Katou Alou*; and I shall here take an opportunity of describing them, as they do not seem to be mentioned by either Rheede or Rumphius.

Of the first I have given specimens to the library at the India House under the name of *Ficus asinina*, as it is called *Gadha Bar* in the Hindwi dialect, *Gadha* signifying an Ass, and *Bar* being a vulgar corruption of *Vata*, the Sanscrita name of the *Ficus Indica* (*Peralu*). It grows on the hills of Behar, and has a very strong affinity to the *Katou Alou* in every thing but the fruit.

*Arbor* magna, e ramis radicantem non vidi. *Ramuli* teretes, annulati, maturi glabri, juniores tomentosi, lactescentes. *Folia* alterna, oblonga, apices prope latiora, basi cordata, acumine brevi obtusa, costata, venis minutè reticulata, rigida, margine reflexo integerrima, supra nuda, subtus tomentosa. *Petiolus* brevissimus, teretiusculus, tomentosus, non lactescens. *Glandula* in nervi medii dorso prope folii basin plana, glabra. *Stipulae* caducæ.

*Receptacula* florifera pisiformia, gemina, axillaria, sessilia, ore clauso glabro tomentosa. *Bractea* cyathiformis, receptaculo brevior, 5—7-fida, irregularis.

*Fici* maturæ virides, molles, magnitudine *Grossulariæ* minoris globosæ, tomento albo denso indutæ, involucro multo majores.

The other plant I found growing from the crevices of rocks in the Mysore country, where it is called *Kalu Atti* or *Kalu Baseri*,

seri, *Kalu* or *Kul* implying *rock*. On this account I called it *Ficus rupestris*, and under this name gave a drawing and specimens to Sir J. E. Smith.

*Arbor* ramis radicantibus tomentosis parva. *Folia* basi cordata, sed apicem versus sæpè dilatata, in humidis locis subangulata, in siccis integerrima, utrinque pilosissima, sed mollia, acumine minimo subobtusata. *Petiolus* teres, tomentosus.

*Fructus* pisiformes, gemini, sessiles, axillares, tomentosi, foliolis tribus bracteati.

One or other of these plants, but which I cannot say, is probably the *Ficus tomentosa* of Willdenow (*Sp. Pl.* iv. 1136.), which, he says, he had from Dr. Roxburgh, who mentions it in the *Hortus Bengalensis*, 103, without reference to any figure. I should certainly have considered my *Ficus rupestris* as the *F. mollis* of Vahl, had he not described the fruit as solitary; yet Willdenow quotes Vahl's plant as being the same with his, which he describes to have the fruit growing in pairs. Perhaps he had learned that Vahl was mistaken; for M. Poiret (*Enc. Meth. Sup.* ii. 653.) follows Willdenow without remark. As Willdenow's plant has the upper side of the leaves smooth, it is perhaps my *Ficus asinina*?

ATTI MEER ALOU, p. 75. t. 58.

I have already mentioned the affinity of this tree with the *Tsjerou Meer Alou* (t. 56.), from which it differs in having the leaves more unequal sided and more scabrous, and the figs larger. It has a still stronger affinity with the *Teregam* (t. 60.), which with leaves shaped like the *Tsjerou Meer Alou*, and a fruit like the *Atti Meer Alou*, is a great deal rougher than either. The two plants are however so much alike, that the description by M. Lamarck (*Enc. Meth.* ii. 496.) of the *Ficus Ampelos*, for

which the *Teregam* is quoted, applies very well in every thing but the fruit to the plant which I take to be the *Atti Meer Alou*; but this again is quoted by M. Poiret (*Enc. Meth. Sup.* ii. 654.) and by Dr. Roxburgh (*Hort. Beng.* 66.) for the *Ficus excelsa*. No species under this name is mentioned in Willdenow; yet it is possible, as the specific character agrees entirely with the plant, that this is what he calls *Ficus septica* (*Sp. Pl.* iv. 1142.). As for this he quotes neither the authorities adopted by Burman (*Fl. Ind.* 226.), his plant is probably different from Burman's. Specimens of the plant that I have seen are deposited in the library at the India House (*Cat.* No. 2413).

HANDIR SEU HANDUR ALOU, p. 77. t. 59.

This plant Burman (*Fl. Ind.* 226.) joined with the *Ficus septica* of Rumphius (*Herb. Amb.* iii. 153. t. 96.), which name he adopted; and the same is done by M. Lamarck (*Enc. Meth.* ii. 496.), both no doubt following the authority of the elder Burman in the explanation of the plates in the *Herbarium Amboinense*. This authority is none of the best; and the form both of the leaves and fruit in the figures given by the two authors is so different, that I suspect they meant different plants. Willdenow was probably of the same opinion, as he quotes neither for his *Ficus septica*, which he took from Forster, and which, as I have said, is perhaps the *Atti Meer Alou*. I have not seen any plant which I could refer to the *Handir Alou*; but it seems to have a very considerable affinity to the *Ficus oppositifolia* of Dr. Roxburgh, and some of its leaves are represented in the figure as having nearly a similar position.

TEREGAM, p. 79. t. 60.

In treating of the *Atti Meer Alou* I have already mentioned somewhat concerning this plant, which Rumphius properly  
judged

judged to be his *Folium politorium* (*Herb. Amb.* iv. 128. t. 63.). These Burman also considered (*Fl. Ind.* 226.) as the same species, which from the Javanese name he called *Ficus Ampelos*. M. Lamarck, treating of the *F. Ampelos* (*Enc. Meth.* ii. 496.), quotes Rumphius with doubt; on what grounds he does not say, but his plant has the mouth of the *receptaculum* so open as to render it an intermediate link between *Ficus* and *Ambora*; from which we may safely conclude that it is neither the *Folium politorium* nor *Teregam*. On this account probably Willdenow has altogether omitted the *Ficus Ampelos*; and on the authority of Loureiro has referred the *Folium politorium* to a species which he calls *Ficus politoria* (*Sp. Pl.* iv. 1144.), a name which he should not have used, because M. Lamarck had previously given it to a very different species (*Enc. Meth.* ii. 500.). Besides, as Loureiro describes the fruit to be disposed in spikes, he probably meant a plant different from that of Rumphius and Rheede, although it may have leaves fitted to polish wood;—for such a quality is found in several species of this genus, and is therefore no proof of identity. In this opinion I am confirmed by Dr. Roxburgh, who neglects Loureiro's quotation, and calls the *Folium politorium*, *Ficus exasperata* (*Hort. Beng.* 66.), thinking it different from the *Ficus Ampelos* of Kœnig (*Hort. Beng.* 103.). Whatever may be the case with these modern innovations, I have little or no doubt of the *Teregam* and *Folium politorium* being the same plant, and of their being the *Ficus Ampelos* of Burman.

The name *Cara-vatti*, applied to this tree by the Brahmans of Malabar, contains both a specific and generic appellation. *Cara*, the specific name, signifies “wild;” and *Vatti* is a corruption of *Vata*, the Sanscrita name of the *Ficus indica*, a word perhaps derived from the same root with the *Vates* of the Latin, as under the shade of this tree the Gymnosophists of old delivered their



their laws. This generic term is therefore applied to some species that do not send roots from their branches; but perhaps such are never called *Vata* or *Vatti* or *Batti* without the term *Cara* prefixed.

PERIM TEREGAM, p. 81. t. 61.

This is another tree, which the Brahmans called *Carabatti*, using the compound word for the generic term, and prefixing the specific name *Meri*, which would seem to countenance the idea above mentioned. No notice was taken of the *Perim Teregam* by any subsequent author, except the compiler Ray, until M. Lamarck quoted it, with doubt however, for his *Ficus symphytifolia* (*Enc. Meth.* ii. 498.). On the contrary, Willdenow (*Sp. Pl.* iv. 1151.) quotes it, but with doubt also, for the *Ficus oppositifolia*, to which indeed it has a considerable affinity; but there is nothing in either the figure or description to induce us to think that its leaves are opposite. In this point, however, Rheede and his painters were often negligent; and I must confess that I at one time thought with Willdenow, that the *Perim Teregam* was a variety of the *Ficus oppositifolia*, of which I gave specimens (*Cat.* No. 2424) to the library at the India House: but on more mature deliberation, I think, that these specimens can scarcely be the *Perim Teregam*, which has the edges of its leaves quite entire, while in my plant they are indented. On the whole I doubt much of the *Perim Teregam* having been noticed by modern botanists.

VALLI TEREGAM, p. 83. t. 62.

Here is a third species, which the Brahmans of Malabar call *Caravatti*; but it is distinguished by having annexed the specific name *Valli* (*scandens*), which, contrary to the usual custom, is placed after instead of before the generic name.

Plukenet very strangely imagined that this was the same with  
his

his *Uvifera arbor Americana convolvulacea, fructu aromatico punctato* (*Alm.* 394; *Phyt. t.* 237. *f.* 4.), which would seem to be a *Michelia* or *Magnolia*.

The younger Burman (*Fl. Ind.* 227.) established a new species of *Ficus*, which he called *Grossularioides*. This consisted of two varieties; and the first was a plant described by Garcin, which having poisonous fruit, as well as many external differences, would appear to be a distinct species from the second variety, which is the *Valli Teregam*. The younger Linnæus (*Sup.* 442.) would seem to have seen this latter plant, and called it *Ficus heterophylla*. M. Lamarck (*Enc. Meth.* ii. 499.) procured from M. Sonnerat specimens of a plant, which notwithstanding some differences, he considered as the *F. heterophylla*; and, although he quotes the *Hortus Malabaricus* with doubt, he uses the description contained in this work to make up a full account, joining what he saw in his specimens to what he found in Rheede, a practice that cannot fail to lead into mistakes. There is indeed great reason to think, on account of the hairiness, that his specimens were like those which Dr. Roxburgh sent to Willdenow, and which he published under the name of *Ficus repens* (*Sp. Pl.* iv. 1149.). Of this, M. Poiret (*Enc. Meth. Sup.* ii. 648.) has become sensible, and he considers the *Ficus heterophylla* of M. Lamarck as the *Ficus rufescens* of Vahl. On my return to Calcutta from Ava (1796) specimens and a drawing of this, under the name of *Ficus repens*, were sent to the late Sir Joseph Banks, and a copy of this drawing is to be found in the library at the India House. I have since also lodged in the same collection specimens from India Proper, under the name of *Ficus rufescens*. These differ a little from the plant found in Ava; but not so much as to warrant their being considered as forming a distinct species, as will appear from the following account.

Ficus

*Ficus repens*  $\alpha$ .

Kha aun Burmanorum.

*Habitat* in ripis Avæ fertilibus.

*Caulis* fruticosus, tres pedes longus, ramosus, glaber, repens.

*Folia* alterna, cordata, obtusa, supra nitida, punctata, rugosa, pilis brevissimis scabra, costata, venis reticulata, margine repando sed integerrimo quasi denticulata, nunc integra, tunc triloba, vel sæpius repanda, sinubus lobisque obtusis. *Petiolus* teres, annulo ramum cingens, mediocris, hispidus. *Stipula* geminæ, laterales, brevissimæ, caducæ. Inter pilos densos brevissimos, qui in petiolum et foliorum nervos insidunt, pauci sunt longiores apice hamati.

*Receptacula* axillaria, lactescentia, erecta, solitaria, pedunculata, ovata, obtusa, angulata, pubescentia, elevato-punctata, apice sexdentato umbilicata. *Pedunculus* erectus, longitudine fere petiolorum compressus, apicem versus squamula una vel altera obtusa bracteatus.

*Ficus repens*  $\beta$ .

*Habitat* in Camrupæ sylvis.

*Caulis* hirtus. *Folia* reverè dentata, supra scabra, et pilis stellatis hispida, subtus hirta, cæteroquin vix diversa.

The leaves of this plant are used in Ava for polishing timber, as is also the case with those of the *Ficus denticulata* of Willdenow (*Sp. Pl.* iv. 1132.), which, although placed by him at a great distance from the *Ficus repens*, is not a very distinct species, differing chiefly in its stem being scandent instead of repent; but this may be owing to its being found in places that are at times inundated, which may occasion the plants growing there to raise themselves, while those in dry places creep on the surface. The leaves of the creeping kind are just as often lobed, as those

those of the kind which grows erect. Specimens of this last were sent from Ava to the late Sir Joseph Banks, under the name of *Ficus scandens*; and others from India have been placed in the library at the India House, under the name of *Ficus denticulata* (Cat. No. 2438), a name not known when I first saw the plant, and which seems to have escaped Dr. Roxburgh, as he called the same plant *Ficus quercifolia*; at least the plant which was shown to me in the Botanical Garden by that name was the *Ficus denticulata*. I am however aware that much reliance cannot be placed on the accuracy of gardeners. The plants of this species also from the two countries differ in a few points, but such as do not warrant a separation.

*Ficus denticulata*  $\alpha$ .

Re-sa-dut Burmanorum.

*Habitat* in Irabatis ripis inundatis.

*Caulis* fruticosus, scandens, teres, ad petiolos annulo dimidiato cinctus, glaber, ramosus. *Ramuli* scabri. *Folia* alterna, petiolata, oblonga, nunc sæpius integra, tunc triloba, vel sinuata, basi integra, serrata, acuta, subtrinervia, venis reticulata, utrinque scabra. *Petiolus* brevis, compressus, canaliculatus. *Stipulæ* geminæ, laterales, caducæ.

*Receptacula* axillaria, sæpius solitaria, aliquando gemina, viridia, magnitudine Amygdali oblonga, umbilico subrotundo subsexdentato obsolete hexagona, scabriuscula. *Bractea* brevis, integra. *Pedunculus* longitudine fere receptaculi teres, pilis setaceis apice glandulosis pubescens.

*Ficus denticulata*  $\beta$ .

Bola Dumor Bengalensium.

*Habitat* in Brahmputris ripis inundatis.

*Folia* ad nervum medium utrinque in pagina inferiore, ubi nervi  
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laterales inseruntur, glandulam habent parvam planam, quam in Ava non innotui. *Fructus* maturus magnitudine *Grossulariæ* ovatus, flavus, ore sæpius quinquedentato.

This last plant, on account of the erectness of the stem, comes nearest the *Valli Teregam*, from which it differs chiefly in being rougher and in having smaller fruit; but I must confess that these appear to me slight circumstances for establishing distinct species.

Willdenow, wishing perhaps to avoid the ambiguity of two plants having been named *Ficus heterophylla*, abandoned this name altogether; and for the plant so named by the younger Linnæus, that is, the *Valli Teregam*, adopts Kœnig's specific name *aquatica* (*Sp. Pl.* iv. 1133.), which leads me rather to suspect that his specimens belonged to the plant which I have called *Ficus denticulata*; for this grows in places which are occasionally inundated: but Rheede says that the *Valli Teregam* grows in woods. It must be also observed, that Willdenow did not see the figs of his plant, on the form of which the difference between the *Ficus denticulata* and the *Valli Teregam* chiefly depends. M. Poiret however (*Enc. Meth. Sup.* ii. 648.), and Dr. Roxburgh (*Hort. Beng.* 65.) retain the name *heterophylla* for the *Valli Teregam*, the *Ficus heterophylla* of M. Lamarck being by M. Poiret called *Ficus rufescens*.

On the whole, the *Ficus denticulata*, *F. repens*, and *F. aquatica* are distinguished by circumstances of no great consequence; and perhaps the *F. truncata* of Willdenow (*Sp. Pl.* iv. 1132.) is not very materially different; and all are nearly connected with the *F. Grossularioides* of Burman, now almost forgotten (*Enc. Meth. Sup.* ii. 657.), although it was the species first introduced into the modern system of botany.

Tsjela, p. 85. t. 63.

The natives of Malabar seem to consider this *Ficus* as the prototype of a genus, giving it no specific name. What *Tsjela* means, I do not know; but *Asouatou* (the name used by the Brahmans) is the same with *Aswattha*, a name given by the Bengalese to the *Ficus religiosa*. Both indeed are very nearly allied; for they have sessile figs growing in pairs, and neither sends roots from the branches. Further, both are usually parasitical plants, and at first take root either on other trees or on walls, which they soon destroy, leaving a congeries of roots above-ground in place of a stem. Both however, if planted in the ground, thrive well, and produce stately and ornamental stems. There are, however, several other *Fici* which grow in a similar parasitical manner; and among these, some of the kinds called *Varinga* by Rumphius, and *Alou* by Rheede, although these send roots from their branches.

Plukenet after Ray calls this plant *Ficus Malabarica, fructu Ribesii forma et magnitudine, Tsiela dicta* (*Alm.* 145.), and compares it to the *Arbor Sycophora Caryophylli aromatici foliis et facie Jamaicensis* (*Alm.* 42.), of which a figure is given in the *Phytographia* (t. 266. f. 1.). Plukenet, however, merely compares the plants, and by no means says that they are the same. He adds in a concluding sentence, that from its branches it sends down fibres, which take root: but it is not perfectly clear whether he means this to apply to the *Tsiela* or to the plant of Jamaica. If he meant the former, he was misinformed, as Rheede does not say a word of such a circumstance; and all persons whom I consulted agreed in denying its taking place. Plukenet himself seems to have been sensible of some error here; for in the *Mantissa*, 75, he considers the *Tsjela* as probably being the *Ficus Indica Mali Limoniæ folio, subtus canes-*

cente, fructu exiguo cortici adnato, Sunutperai Malabarorum, which he places immediately after the *Ficus religiosa*, a species that does not send these fibres from its branches. It seems, however, to be on the first supposition of Plukenet alone that Linnæus and the younger Burman (*Fl. Ind.* 226.) joined the *Tsjela* to the *Ficus indica*, placing it in the same variety with the *Varinga latifolia* of Rumphius (*Herb. Amb.* iii. 127. t. 84.), which cannot possibly be admitted (see my *Commentary*, *Linn. Trans.* xiii. 487.). It seems indeed difficult to suppose how Burman could imagine the *Tsjela*, with leaves nearly lanceolate, to belong to the same species with the *Katou Alou*, which has ovate or cordate leaves. I indeed think it probable that this quotation arose from an error in the person who engraved the 64th plate in this volume of the *Hortus Malabaricus*, and who instead of *Tsjakela* has placed over it *Tsjela*; so that Burman seeing this, considered it as the plate representing the *Tsjela*.

I have already mentioned, when treating of the *Katou Alou*, that M. Lamarck selected it for his *Ficus Indica*; but rejected the *Tsjela*, as not sending roots from its branches; and neither he nor M. Poiret attempted to introduce it into the system. Willdenow, on the contrary, rejecting the *Katou Alou*, adopts the *Tsjela* for his *Ficus Indica*, leaving out from his specific character the essential words *ramis radicanibus*, used by Linnæus. Willdenow had seen specimens of his *Ficus Indica*; but whether they belonged to the *Tsjela* or to the *Varinga latifolia* it is impossible to say, as he quotes both. Dr. Roxburgh, who most properly restored the name *Ficus Indica* to the *Peralu*, or Banyan-tree, and who was perfectly acquainted with the *Tsjela*, calls it *Ficus Tsjela* (*Hort. Beng.* 66.).

Besides the *Tsjela*, I have found in Gangetic India three other species so very nearly allied, that the names *Nakur*, *Pakur*, and *Naksa* are applied to them in a different manner by different persons.

persons. I shall here, therefore, give an account of them all; especially as the *Tsjela* is the only one of which a figure has been published.

1. *Ficus Tsjela*. *Hort. Beng.* 66.

*Ficus Indica*. *Hort. Kew.* v. 483. *Willd. Sp. Pl.* iv. 1146.  
(exclusis synonymis nisi *Rheedii* omnibus.)

*Ficus indica* Mali Limoniæ folio subtus canescente, fructu exiguo cortici adnato. *Pluk. Mant.* 75.

*Tsjela*. *Hort. Mal.* iii. 85. t. 63. perperam a Bermanno (*Fl. Ind.* 226.) cum *Varinga latifolia* ramis radican-  
tibus conjuncta.

Naxa Bengalensium.

Pakur Hindicè.

*Habitat* ad Indiæ pagos.

*Caudex* omnino ut in *F. religiosa*. *Folia* ad basin sæpe acutiuscula, semper cuneato-angustata, nunquam exquisitè ovata, parum undulata, nervis vix exactè oppositis subtrinervosa, costata, venosissima, utrinque glabra, multo quam in *F. religiosa* minora. *Petiolus* ad apicem posteriùs vix glandulosus, canaliculatus, tenuis, latitudinem folii longitudine superans.

*Fici* geminæ, axillares, pisiformes, glabræ, sessiles, bractea brevi triphylla cinctæ; maturæ folio caduco nudatæ.

*Flores* foliis pullulantibus se manifestant, annoque integro consumpto maturescunt.

2. *Ficus scandens* mihi, sed non *Lamarckii*, quæ *Ficus stipulata Willdenovii*.

Lot (scandens) Pakur Bengalensium.

*Habitat* ad Matsiæ pagos.

*Arbor* magna. *Rami* horizontales, quibus sæpe insidentia semina



mina ibi pullulant, radices longas ad terram demittentia ; sed radices nulli e ramis ipsis prodeunt. *Folia* glabra, acuminata, trinervia, integerrima, nunc sæpius ovalia, tunc subcordata, vel etiam basi aliquando cuneata. *Petiolus* brevis, canaliculatus.

*Fructificationem* non vidi.

### 3. Ficus Lacor.

Ficus Ind. Orient. Obe vulgo junioris folio, flore albo tubuloso, sericea lanugine obsito, fructu orbiculari, Pancer Maram Malabarorum. *Pluk. Mant.* 75.

Lakor seu Nakor Hindicè et Bengalensium.

*Habitat* ad Indiæ Gangeticæ pagos rarius.

*Caudex* omnino ut in *F. religiosa*. *Folia* oblonga, cordata, glabra, acuminata, integerrima, subtrinervia, costata, venosissima, plana. *Petiolus* ad apicem vix glandulosi, canaliculati, latitudine foliorum breviores.

*Fici* geminæ, sessiles, pisiformes, pilis albis rectis densis tomentosæ. *Bracteæ* triphyllæ, obtusæ, ficis multo breviores.

TSJAKELA, *p.* 87. *t.* 64, where it is erroneously called TSJELA.

The error above mentioned has been already noticed in treating of the *Tsjela* ; as has also the error into which I fell in stating Plukenet to have considered the *Tsjakela* as the same with what he figured in the *Phytographia*, *t.* 178. *f.* 1. On the contrary, he considered it as the same with his *Ficus arbor Americana, Arbuti foliis non serrata, fructu Pisi magnitudine, funiculis e ramis ad terram demissis prolifera* (*Alm.* 144 ; *Phyt.* *t.* 178. *f.* 4.). This opinion, however, is not tenable, as the *Tsjakela* has no roots of the kind, and is a link connecting the *Tsjela* and its kindred species with the *Arbor Conciliorum* of Rumphius, and with the *Ficus religiosa*. The Brahmans of Malabar indeed class it with  
the

the *Peralu*, giving it the generic name *Vodou*, no doubt derived from the Sanscrita *Vata*; but in this they have been guided by the form of the leaves.

The younger Burman (*Fl. Ind.* 227.) took up this plant by the name *Tsjakela*, joining to it the *Ficus Surattensis et Malabarica*, *Mori folio* of Garcin: but after this the plant seems to have been unnoticed until Mr. Aiton published the first edition of the *Hortus Kewensis*, when he called it *Ficus venosa*. Willdenow afterwards, in the *Berlin Transactions*, published an account of a tree which he took to be that of the *Hortus Kewensis*; but when he published the *Species Plantarum* (iv. 1136.), he discovered that he had been mistaken. In place, however, of leaving the name *venosa* with the plant, which had been originally so called by Aiton, he transferred it to his new plant, and the *Tsjakela* he called *Ficus infectoria*, a word probably of his own coining, but meant perhaps to imply its being a dye. This name, however, has been adopted in the second edition of the *Hortus Kewensis* (v. 485.), and by Dr. Roxburgh (*Hort. Beng.* 66.); but rejected by M. Poiret (*Enc. Meth. Sup.* ii. 657.), who calls the *Ficus venosa* of Willdenow the *F. leucantatoma*,—rather a hard name. Specimens of the *Tsjakela*, under the name given by Willdenow, have been presented to the library at the India House; but I must observe that the specific character of the *Ficus infectoria*, given by Willdenow and copied by Aiton, is not applicable to the plant which I mean; and that I judge it only to be the same, from the *Tsjakela* being quoted as synonymous. I shall therefore describe it.

*Ficus venosa.* *Enc. Meth. Sup.* ii. 657.

*Ficus infectoria.* *Hort. Beng.* 66. *Hort. Kew.* v. 485. *Willd. Sp. Pl.* iv. 1137, quod ad synonymon, sed non quod ad characterem.

Ficus

*Ficus* Tsjakela. *Burm. Fl. Ind.* 227.

Tsjakela. *Hort. Mal.* iii. 87. t. 64.

Karu Basseri Carnatæ.

Achin Bengalensium.

*Habitat* ad Indiæ pagos.

*Arbor* vasta, lacte plurimo scatens, sæpe parasitica. *Ramuli* teretes, annulati, glabri, non radicantes. *Folia* alterna, approximata, oblongo-ovata, basi obtusissimâ vel retusâ subcordata, acuminata, integerrima, glabra, trinervia, costata, venosissima, decidua. *Petiolus* glaber, brevissimus, depressiusculus, canaliculatus, ad apicem subtus glandula plana sæpe instructus. *Stipulæ* geminæ, gemmaceæ, annulo ramum cingenti insidentes, folio novello longiores, oblongæ, obtusæ, integerrimæ, rubræ, deciduæ.

*Fici* geminæ, sessiles, axillares (sed post foliorum casum sæpius maturescunt), pisiformes, exalbido-rubellæ, umbilico clauso sæpius acuminatæ, punctatæ, involucrio emarcido 3—5-phyllo cinctæ.